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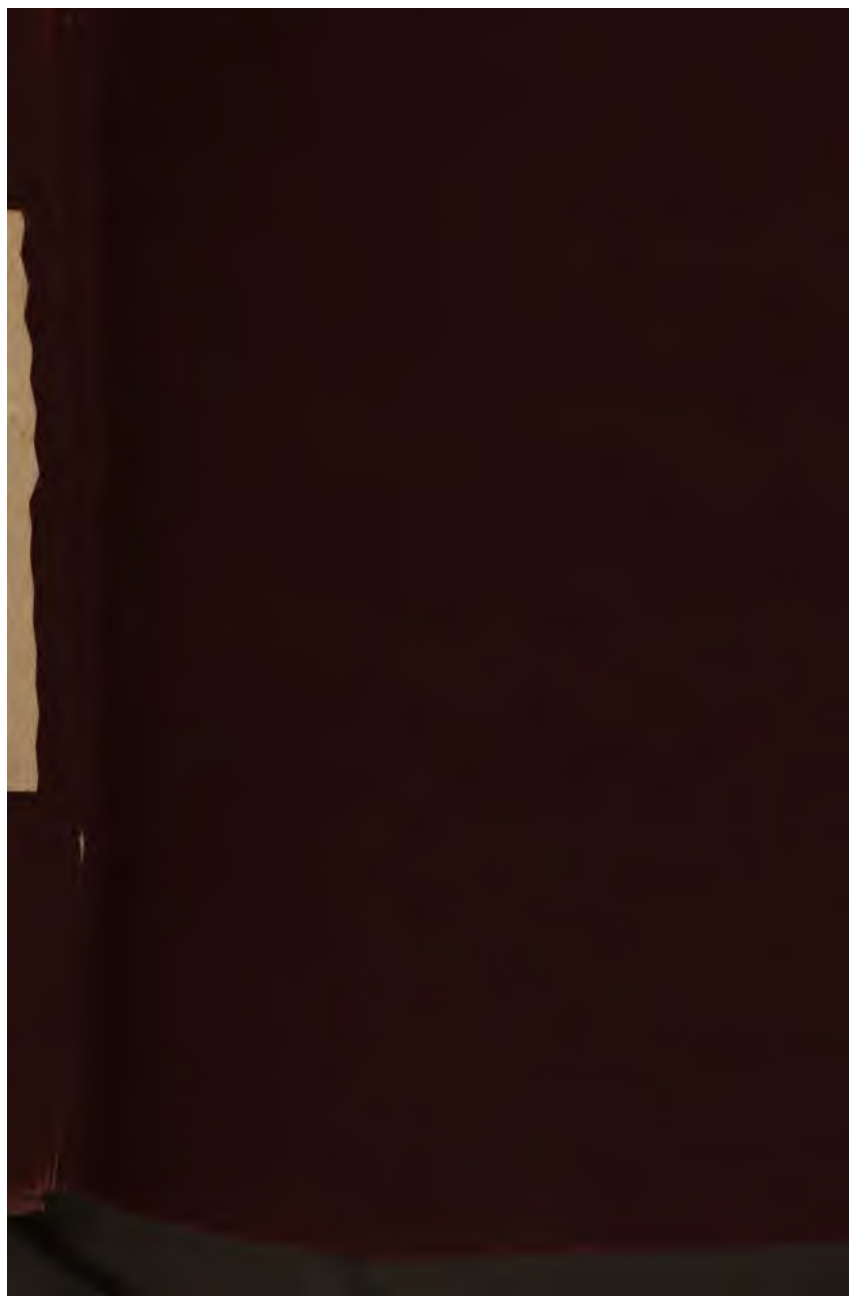
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ANNUAL ABSTRACT
OF
THERAPEUTICS, MATERIA MEDICA,
PHARMACY AND TOXICOLOGY,
FOR
1867.

1. The first part of the document is a list of names and addresses, which appears to be a directory or a list of contacts. The names are written in a cursive script, and the addresses are listed below them. The list includes names such as "John Smith", "Mary Jones", and "Robert Brown", among others.

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OF
THERAPEUTICS,
MATERIA MEDICA,
PHARMACY AND TOXICOLOGY,
LANE LIBRARY
1867;

FOLLOWED BY AN ORIGINAL MEMOIR ON GOUT,
GRAVEL, AND URINARY CALCULI,

BY
A. BOUCHARDAT,
PROFESSOR OF HYGIENE TO THE FACULTY OF MEDICINE, PARIS; MEMBER OF THE
IMPERIAL ACADEMY OF MEDICINE.

TRANSLATED AND EDITED BY
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ADJUNCT TO THE PROFESSOR OF CHEMISTRY, UNIVERSITY OF MARYLAND;
MEMBER OF THE MARYLAND ACADEMY OF SCIENCES.

PHILADELPHIA:
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1868.



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EDITOR'S PREFACE.

THE eminently practical character of this yearly periodical, and the very high estimation in which it is held by the Medical profession in Europe, have been the chief incentives to the Editor in the production of an English edition.

The selections, it will be observed, have been made by Professor Bouchardat, mainly with a view to the useful information they convey, mere theoretical abstractions being omitted, as not in conformity with the nature of the work; still, where scientific questions embody points of clinical value, or where they furnish a basis upon which practical induction may be founded, they have not been excluded. The work, therefore, is addressed to the requirements of physicians whose engagements do not permit of their searching over the immense field from which these fruits have been gathered; to practitioners in the country, as conveying the results of the active labors of the "toilers" in our profession; and to medical

men generally, in the amount of original information from sources not hitherto available.

The translation has been made with due regard to a preservation of the text. In the formulæ given, where no great nicety is required, the *gramme* has, for obvious reasons, been regarded as equivalent to *fifteen grains*, but where rigorous proportions are indicated, their rendering into our system has been done with scrupulous exactness.

The Editor's notes and additions are separate from the body of the work, and are made, not with a view to improve the original, but for the sake of rendering perspicuous parts which might otherwise present some difficulties to the American reader.

M. J. DE ROSSET, M.D.

BALTIMORE,
December, 1867.

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ANNUAL ABSTRACT
OF
THERAPEUTICS AND MATERIA MEDICA.
1867.

NARCOTICS.

THE PROPORTION OF MORPHIA IN OPIUM; A MODIFICATION OF GUILLERMOND'S PROCESS. (Roussille.)

THE estimation of opium is recognized as indispensable since the beautiful researches of M. Aubergier, and every process which tends to render it more exact and simple should be favorably received.

The following recommends itself in this respect: Guillermond's process consists in macerating the opium in 72 per cent. alcohol, and is very accurate, but inconveniently long; and therefore I propose to introduce some modifications.

Two hundred and twenty-five grains of opium are treated with $6\frac{1}{4}$ drachms of boiling water until thoroughly disintegrated; to this 15 drachms of boil-

ing 95 per cent. alcohol are added, and the whole set aside for one hour, when it is to be filtered through a very close cloth.

The residue is then treated with $2\frac{1}{2}$ drachms of water and 15 drachms of alcohol as before. This residue is treated with $12\frac{1}{2}$ drachms of boiling absolute alcohol.

All of the filtrates are mixed, and when cold are again carefully filtered, evaporated to about one-third, and when cold are still again filtered.

The morphia is then precipitated with $2\frac{1}{2}$ drachms of ammonia, and evaporated over sulphuric acid. In three days the deposited crystals may be collected and washed with ether and water.

Six successive trials gave the same results as Guillermond's process, which requires five days or more, whilst this only requires three days.

TREATMENT OF OPIUM BY SPIRITS OF TURPENTINE.

If opium be heated with spirits of turpentine, and the solution evaporated, according to Goble, voluminous crystals of narcotin are obtained; this fact confirms Pelletier's assertion that it exists in a free state therein.

RHÆADIN. (O. Hesse.)

In examining the capsules of the Red Poppy (*Papaver Rhæas*), with a view of extracting morphia from them, O. Hesse has lately found in its stead another alkaloid, which he has called Rhæadin. This crystallizes from an ethereal solution in white prisms; it is soluble in alcohol, water, and in basic

solutions. It is almost tasteless, and is precipitated from its salts, by ammonia, in white flakes, which become crystalline. By corrosive sublimate, it is precipitated in a white amorphous mass; by the chloride of gold, yellow; but is principally known by its solution assuming promptly a magnificent reddish-purple with acids of the most different nature. The primitive, colorless alkaloid is changed under this decomposition into a brown amorphous mass.

Rhœadin is found in every good specimen of opium (*Papav. Somnif.*), but cannot be extracted in a pure state. From the preparation, properties and composition of this alkaloid, it is thought to possess some analogy with the porphyroxin of Merck. It resembles also one of the alkaloids which Deschamps found in the heads of Poppies (*Papav. Somnifera*).

SUBCUTANEOUS INJECTIONS OF MORPHIA FOR THE PAIN OF CHORDEE. (Scarenzo.)

M. Scarenzo having to treat a blennorrhagia attended with chordee, of which the excessive pain during the night constituted a formidable complication, had, with the usual lack of success, prescribed all the various sedatives generally employed in such cases. He determined finally to use a subcutaneous injection of the muriate of morphia (of the strength of 1 part of the salt to 100 parts of water), in the perineum.

The injection was given in the morning, and the night following the patient was able to sleep. It is to be observed that the sedation was not the result of narcotism, for the patient got up several times to urinate.

The next day no injection was given, so that the effects might be observed, and the pain returned, but in a less degree.

A final injection was given the third day, and after that there was no more pain during erection; and relieved of this complication, the blennorrhagia was soon cured. (*Giornale Italiano delle malattie venere e della pelle*, 16th April, 1866.)

E. GOBERT'S DIARRHŒA MIXTURE.

R. Syrup of Rhatany,	3x
Tincture of Cachou (<i>Anacardium occidentale</i>),	3iij.
Carbonate of Lime,	3j
Sydenham's Laudanum,	gtt. xxv
Mint-water,	3v

M. A teaspoonful every half hour.

(*Bull. Thérap.*)

THE TREATMENT OF CONSTIPATION WITH ATROPIA.

Bretonneau has used with success, as is well known, the extract of belladonna, in doses of from $1\frac{1}{2}$ to 3 grains, to overcome constipation. M. Fleming prefers to associate atropia with the sulphate of magnesia for the same purpose.

Dissolve $7\frac{1}{2}$ grains of atropia in 5 drachms of distilled water by means of a few drops of hydrochloric acid, and add sufficient rectified spirits to make 10 drachms.

He moreover administers, morning and evening, while fasting, the following:

R. Sulphate of Magnesia,	3j
Aromatic Sulphuric Acid,	gtt. x
Tincture Orange Peel,	3j
Water,	3j M.

To the evening dose is added 10 drops of the above solution of atropia, the quantity being increased by 2 drops every day, until the physiological effects of the remedy are produced, viz., dilatation of the pupil, dryness of throat, thirst.

Sometimes, to obtain these effects, it is necessary to carry the dose to 40 or 50 drops. The dose is then diminished, and continued for two or three weeks, after which it is gradually omitted altogether.

The writer would advocate the necessity of the physician making two visits a day, since it is important not to carry the physiological effects too far. (*British Med. Journ. and Gaz.*)

EULENBERG ON THE USE OF NARCEIN.

Narcein has not come into general use, owing, partly, to its high price, and it is conceded that morphia in small doses may fulfil all of its therapeutical indications. However, the following is a *résumé* of Mr. Eulenberg's late researches: "The doses generally employed for internal use are from one-sixth to one-half grain, and for hypodermic injection, one-eighth to one-fourth grain. With persons in full health these doses were followed by slight narcotic effects without any disagreeable subjective symptoms, as headache or nausea. The taste of pure, colorless, and odorless narcein is slightly bitter and metallic. The hypodermic injection produces a slight burning sensation at the point where introduced, but its intensity and duration is less marked than that accompanying any other alkaloid, as quinia, morphia, &c."

Its action is never irritating; only in one patient, with a discolored and sensitive skin, each injection, given in the region of the face, caused an oedematous swelling at the wound, which disappeared in twenty-four hours, leaving an indurated and tender point. This is not characteristic of narcein, for it may be observed after the similar use of morphia and other alkaloids.

Among its physiological effects, simultaneously with narcotism, there is a marked action upon the circulation. Unlike morphia, it causes a reduction in the pulse, followed after a while by an acceleration. The number of pulsations rarely exceed twelve or sixteen a minute during the use of the remedy. Its action upon the nerves supplied to the skin seems to be analogous to that of other narcotics, producing its effects both through peripheral and central agencies. The repeated use of doses internally often causes one or two stools, and may even induce a diarrhoea. On the other hand it seems to retard menstruation. We may, in a word, conclude that there are no muscular manifestations such as follow the subcutaneous use of morphia. And Mr. Eulenberg declares that, with respect to its sedative and soporific effects, narcein is preferable to any other substance. Its use is indicated not only in pure neuroses, but in all diseases where pain is the most marked symptom, such as is the case in certain articular affections, phlegmons, ocular lesions (iritis, corneitis, pannus, &c.), orchitis, epididymitis, cystitis, cirrhosis, and after painful wounds or operations. In all of these cases narcein, given internally

or under the skin, in the doses indicated above, relieves pain rapidly, and induces sleep, lasting four, five, and even as many as nine hours—a soft, tranquil and uninterrupted sleep with a quiet awaking. These doses have never given rise to any disagreeable or toxic symptoms.

Although in numerous cases these same effects may be obtained with morphia, yet it is sometimes unreliable, a great many patients, particularly women, presenting a kind of idiosyncrasy which renders its use impossible. Given internally, the stomach is apt to reject morphia; or perhaps, instead of inducing sleep, it causes great excitement, with painful dreams, delirium, and convulsions. And with some patients, morphia has but a minimum action, and of short duration. Used hypodermically, it is true, morphia is more active and certain, but likewise thus increases all of its objections, often inducing cephalalgia, syncope, emesis, and collapse; often, again, the sleep is too prolonged (fifty-four hours, according to Semeleder). Moreover, the effects of morphia are sometimes experienced days after awaking.

Among the cases cited by Mr. Eulenberg are several in which the effects of morphia were null or insufficient, and in these narcein acted most satisfactorily.

As a sedative and narcotic, narcein is a substitute for morphia, and one which at least is equal to it, and to be preferred in many cases. M. Eulenberg has had but few occasions for the use of narcein in neuralgias (hemicrania, supraorbital, trifacial and

crural neuralgia), but in each of these the remedy afforded quick relief. In headache one-sixth of a grain of narcein at the outset, followed after a short time by one-ninth of a grain, determines a sleep of several hours, after which the patient awakes completely restored. (*Journ. Méd. de Bruxelles.*)

A CASE OF POISONING BY ATROPIA USED
ENDERMICALLY. (Ploss.)

An individual, aged thirty years, was taken with a laryngeal affection, which Dr. Ploss regarded as of syphilitic origin. The family sought the advice of a consulting physician, who viewed it as a simple laryngitis, and prescribed a blister to the throat. The subsequent day the same physician proposed to cover the blistered surface with an ointment containing 3 grains (15 centigrammes) of atropia to 2 drachms (8 grammes) of lard.

Several minutes after its application the patient sprung suddenly from his seat in indescribable agony; he ran about the room crying that he was suffocating, that all of his blood was rushing to his head, that everything was black before him, as if some one was strangling him. He furiously tore away the plaster, and fell upon the sofa with fixed eyes and flushed countenance. His dysphagia and dyspnœa increased more and more; the pupils were enormously dilated, and the eyes rolled about with convulsive movements; the conjunctivæ were injected; there were chronic convulsions of all the limbs, like in a violent access of chorea; respiration

was quickened; pulse 140 to 150 a minute; and articulation was impossible. Venesection was attempted, but could not be accomplished on account of the continued convulsive movements; and nothing could be introduced by mouth or rectum. This frightful state grew rapidly worse; respiration was soon interrupted; the pulse became threadlike; and the patient died within two hours after the application of the ointment. (*Gaz. Méd. de Lyon*, No. 6.)

This example, which is not the only one in the annals of medicine, shows us with what circumspection energetic remedies should be employed, in ointment or glycerine, upon denuded surfaces. When such powerful agents are prescribed, an exact dose must not only be fixed upon, but the methods of absorption should be well considered, that nothing be left to hazard.

**DR. BOULU'S SEDATIVE PLASTER OF RESIN AND
BELLADONNA. (Bretonneau.)**

Cutaneous medication, so commonly and so justly used, has just experienced a valuable contribution from Dr. Boulu, which will enable us to combat rheumatic, neuralgic, gouty, and articular affections, &c. The following is the formula he has fixed upon:

Diachylon,	.	.	.	.	500 parts.
Extract of Belladonna,	.	.	.	.	50 "
Turpentine,	.	.	.	.	50 "
Mix.					

This mass is spread so that a piece 4 inches (1 décimetre) long shall contain about $7\frac{1}{2}$ grains of the two

last ingredients. The nice and prolonged application of this sedative cloth over a diseased part produces, necessarily, a well-marked elevation of temperature, and a moisture favorable to the absorption of the active matters of the mass. And if now there be any doubt of the absorption of substances contained in liniments, ointments, &c., at least there can be none with respect to this preparation, under the conditions under which it is applied.

Moreover numerous cures obtained by means of this plaster, in the hands of a large number of physicians, prove conclusively its efficacy.

CAYRADE ON PICROTOXIN.

Picrotoxin is a convulsive poison. Its therapeutic effects place it alongside of strychnia. The Germans have used it successfully in paralysis. The dose should be a little larger than that of strychnia, and in experimenting with broken doses there is no reason to fear those sudden accidents which, notwithstanding every precaution, sometimes surprise the physician in the course of a treatment with strychnia. The antidotes are the same for each; and after an emetic, given to remove the poison not yet absorbed, recourse should be had to chloroform.

1st. Picrotoxin excites the excito-motor power of the spinal cord.

2d. Picrotoxin acts upon the entire nervous system, its manifestations passing progressively from above downwards:

1st. On the brain.—Diminution of general sensibility.

2d. On the cerebellum and the corpora quadrigemina.—Dizziness, and lack of co-ordination in movement.

3d. On the spinal cord.—Reflex convulsions, passing from above downwards in becoming general.

Unlike strychnia, picrotoxin exerts its effects upon the entire motor nervous system, which explains to us the diversity in their manifestations.

The action of picrotoxin is slower than that of strychnia,—it is more gradual, and, unlike the latter, does not destroy the condensing (?) power of the cord. There has also been observed :

1st. A partial exhaustion of reflex force, and consequently its effects are lessened.

2d. A persistence of voluntary movements.*

NEW ALKALOIDS IN THE ACONITE PLANT.

Hubschman has extracted from the *Aconitum Lycoctonum* two alkaloids, which he has called acolytin and lycoctonin. The first is a white powder, insoluble in ether, and soluble in water and in alcohol. Lycoctonin is crystallizable, very soluble in alcohol, but dissolves with difficulty in ether and in water.

* Picrotoxin is a bitter principle found in the seed of the *Cocculus Indicus*, and to which its poisonous properties are due. It crystallizes from an ethereal solution in right prismatic crystals, which are intensely bitter. It is said to be largely employed in England to impart a flavor to beer. Its formula is $C_{12}H_{14}O_5$ —(O=16).—TRANSLATOR.

ON THE QUANTITY OF ALKALOID CONTAINED IN
EUROPEAN AND AMERICAN ACONITE.

Procter dried the tubercles of aconite, reduced them to powder, macerated and exhausted them by displacement with alcohol of .835 sp. gr. The alcohol was subsequently removed by distillation, and to the residue diluted sulphuric acid was added, this being evaporated on a sand-bath to a syrupy consistency. This syrupy liquid was slightly acid, and there swam upon its surface fatty, resinous drops. On account of this it was shaken up with ether, in order to remove the fat and resin, and next added to an excess of ammonia; it was then again shaken up with ether to dissolve the free aconitin. This ethereal solution gave, after evaporation, a strongly alkaline residue, high-colored, and slightly soft, and weighing 12 parts for every 1000 parts of the American tubercles, but only 6 for the European.

In order to purify the aconitin, the impure residue was taken up with dilute sulphuric acid, and the solution filtered. The aconitin was again precipitated, dissolved in ether, and this solution evaporated to dryness.

In this manner the American aconite gave $4\frac{2}{10}$ per cent., and the European only 2 per cent. of aconitin.

- LAILLER'S TINCTURE OF ACONITE.

Lailier evaporated to the consistence of an extract, over a sand-bath, 150 grains of his Tincture of Aco-

nite, which is made with equal parts of aconite and alcohol of sp. gr. of .833.

This extract was mixed with a little fish, and given to a cat, which was kept in the laboratory under observation. About an hour after it had eaten this the cat commenced to mew plaintively; its position was anxious, tongue dry, hair bristling. There was some vomiting, the gait was staggering, and at length it fell, after a few somersets, into a comatose condition which lasted several hours. Apparently the cat was going to die, but it recovered and remained without appetite for two days, after which all the symptoms disappeared. The cat was suckling a kitten which remained at the teat during the entire period of the coma, and the next day it was found dead. It was evident that the cat had been under the poisonous influence of the aconite, the symptoms being identical with those observed by Messieurs Larrey, Spræger and Brodie when this plant was given to animals. The death of the young kitten was plainly due to the poisoned milk of its mother, and the deduction was that the tincture of aconite was a remedy whose activity could be depended upon, and that it could not be taken in from 200 to 300 grain doses, as M. Debout assures us, without grave consequences.

It furthermore occurred to Lailier that if some remedies containing aconite are occasionally found without any active properties, or, at least, with doubtful ones, it is due to changes which such remedy undergoes, or to the bad condition of the plant when it was gathered. Fortunately, he says, he found

this opinion officially set forth in the new French Pharmacopœia, a work whose scientific value has given warrant to the impatience with which its issue was awaited. With regard to the therapeutic properties of aconite, Dr. E. Dumesnil, physician in charge of the Asylum "de Quatre Mares," has prescribed the tincture in doses of 30 to 45 grains a day, to combat hallucinations in the hearing of the insane. But the trial has not been attended with success; those to whom the remedy was given experienced at first some relatively tranquil moments, but the hallucinations always returned and remained, regardless of a continued treatment.

ON THE EFFICACY OF VERATRIA IN RHEUMATIC IRIDO-CHOROIDITIS.

Dr. Martin, adjutant of the first class, makes the following report. He was taken with an intense irido-choroiditis, with sharp, shooting pains, accompanied with some pains of the extremities. A most energetic antiphlogistic treatment was instituted, but was of no benefit, and the progress of the disease was arrested with sulphate of quinine and veratria. The following are the results of his careful observation of his own case:

1st. Veratria is a powerful agent, and requires to be carefully watched.

2d. In doses of one-fourth of a grain it causes, within a half hour, a sensation of heat in the stomach, with pricking, which gradually extends to other parts of the intestinal tube.

3d. After absorption, veratria exerts an influence upon the circulation, and interferes with innervation in a marked degree; the pulsations of the heart are lessened, and the pulse becomes less frequent and more feeble. There are sensations of heat, formication and pricking about the face, and more particularly *loco dolenti*, and about the extremities.

4th. In doses of one-fourth of a grain, veratria produces such formication of the limbs as to give rise to involuntary movements, but the sensitiveness of the skin is in nowise diminished.

5th. The dose of veratria can be gradually increased. Dr. Martin has taken one-eighth of a grain every fourth hour, until five doses were taken.

6th. Thus given, veratria occasions some nausea, but its effects upon the circulation and innervation are less violent than from larger doses.

7th. Its purgative action was not demonstrated in the case under observation.

8th. Its value in rheumatic affections has been already stated; at least, the author has no doubt of its efficacy in the irido-choroiditis with which he was affected.

9th. It is suggested that the effects produced by veratria would render its use advantageous in the treatment of hemiplegias, and in paralyses generally. (*Montpéllier Médical*, Jan., 1866.)

THE ATRACTYLIS GUMMIFERA. (Ed. Lefranc.)

The receptacle of this plant is nourishing, whilst the root is very poisonous. According to Desfon-

taines, both are good for food, but certainly this property could have been attributed by him to the receptacle and root of the *Atractylis* only from his having been misinformed; or perhaps observations made upon the *Cyanara acaulis* (Tefran, of the Arabs), which is used as food, both raw and cooked, were wrongly ascribed to the *Atractylis*. If the *Atractylis* and the poisonous properties of its root are still generally unknown to Europeans who live in Algiers, and if botanists have been for a long time led by the testimony of the illustrious Desfontaines to believe that it is regarded as a choice article of diet by the Arabs, nevertheless these latter are unanimous in declaring it a most dangerous poison. All of them, men and women, exclaim upon seeing this plant, *El Heddad*! Children learn early to avoid it! *Reddou balkoum âla el Heddad* (Take care of the Heddad!) is not unfrequently in the mouth of the shepherd-boy. But these poor children, driven by hunger, are not always careful, and the habit which prevails among them of eating everything that comes within reach is each year the cause of some of them being poisoned. And cases of similar accidents befalling Europeans who have eaten the root, both in a raw and cooked state, are not infrequent.

The Arabian women make use of small fragments of the root, in one or two scruple doses, to accelerate slow parturition. And their lords and masters cautiously whisper that their knowledge of its use extends even to its influence in producing abortions, and they bring it into play for this purpose under the specious pretext of calling upon *Mectoub* to re-

veal to them the mysteries of their future. Whatever may be the information of these dark devotees, with respect to the gum-bearing *Atractylis*, good Catholics will scarce seek it of them;—and yet we know that, through their religious zeal, they have much to communicate.

Perhaps Desfontaines disliked them for a cause?

The active principle is toxic, an acrid narcotic, and very volatile.

PELICAN ON THE PHYSIOLOGICAL ACTION OF THE NERIUM OLEANDER.

It is known that in Algiers, as well as in Greece and Italy, this oleander finds its native soil. A celebrated pharmaceutist of Algiers, to whom I applied, sent me a specimen of the alcoholic, and one of the alcoholico-aqueous extract. It is principally with the latter that the most evident and well-marked results were obtained. My researches were not instituted with regard to the various constituents of the shrub, since these have been made the study of such chemists as Messieurs Landegrer,* Latour,† and Lukoneski;‡ nevertheless I have arrived at the conclusion that the poisonous principle resides in a yellow, resinous substance, which has been extracted from the *Nerium* of Algiers by M. Latour, and described by him; and this poison acts specifically upon the

* Vierteljahresschrift v. Wittstein, t. xxi, p. 216; t. vii, p. 270; and t. ix, p. 119.

† Journal de Pharm., t. xxxii, p. 237.

‡ Répertoire de chimie appliquée, t. iii, p. 77.

heart.* The following are the results of my experiments with both extracts upon frogs. First, with the aqueous extract: This poison has an analogous action to that of other poisons which exert their influence upon the heart, as stated above.

1st. The heart's beats are accelerated, but,

2d. In a few minutes, become slower;

3d. In becoming slower, they become irregular, and peristaltic, so to speak, and then cease entirely.

4th. The ventricles of the heart, already arrested in their movement, are completely empty of blood; but the auricles continue to contract a short time before ceasing entirely.

5th. The heart being thus paralyzed, the frogs still preserve all of their voluntary movements during a period depending upon the individual irritability of the animal under observation.

With respect to the alcoholico-aqueous extract, although it presents some differences, as will be observed, yet it is also entitled to be ranged among poisons whose influence is exerted upon the heart, since this organ is also paralyzed by it. The difference consists in that,

1st. The heart, in becoming paralyzed, is arrested, distended with blood, as if at the period of the diastole,—whilst, as has been seen, with the yellow, res-

* This resinous substance, almost insoluble in water, but readily soluble in amylic alcohol and in chloroform, was prepared for my experiments by Dr. Illisch, who also made investigations into the chemical properties of the plant, with a view of reconciling some differences which existed between the analyses of the chemists named above.

inous substance of Latour, as with all other cardiac poisons, the arrest is during the systolic movement, when the heart is contracted and empty.

2d. Although distended with blood, and at rest, yet the heart continues to respond to mechanical, chemical, and electric excitants, which, as is known, is not the case with other poisons of this class, except, perhaps, with small doses of digitalin.

3d. Finally, when the heart ceases to respond to these agents, it commences to contract and to become rigid, constituting thus an instance of paralysis and cadaveric rigor progressively developed in frogs, as in all mammiferous animals under the influence of heart-poisons.

This is a point to which M. Claude Bernard has already drawn the attention of experts, in a celebrated case which was adjudicated last year by the Court of Assizes of the Department of the Seine.

The question arises as to whether the difference between the two extracts, thus differently prepared, may not lie in the fact that the alcoholico-aqueous extract contains many substances, which, although soluble in water, yet for this reason prevent the action of the poisonous principle, of which the quantity contained in this extract is inconsiderable.

Such, at least, is my explanation of the analogy existing between this extract and the small doses of digitalin or extract of digitalis. Other experiments that I have made upon dogs have clearly proved the analogy which exists between this extract and digitalin and heart-poisons generally, in their action upon other animals.

Hence I am led to believe that the Nerium Oleander, although an energetic poison, can be employed wherever digitalis is used, always observing the same precautions in its administration.

TOXICOLOGICAL EXPERIMENTS WITH CURARE AND CURARIN. (B. Voisin and H. Liouville.)

If the experiments be made with the curare itself, reference must be had to its physiological action principally. For this purpose dogs, hares, frogs and other animals may be used, subjecting them to subcutaneous injections.

A part, or the whole of a given residue, having been thus administered to the animal under experiment, phenomena analogous to those obtained when given internally are manifested. There is immobility passing into paralysis which exists almost immediately among the secondary symptoms; next shiverings and convulsions, clonic and general; trembling, undulatory movements pervading successively the entire body; next, a still greater immobility, a general state of flaccidity manifested by the animal preserving absolutely the position in which it is placed; next, accelerated respiration and pulsation, the latter becoming irregular; and, finally, if death is to supervene, all of these symptoms are exaggerated, and additionally there is double exophthalmia; injected conjunctiva; hypersecretion of tears; rapid and excessive changes of the pupil; increase of internal heat (in rectum and vagina), and of external (ears and face), and death by apnœa.

We will return to the examination of the cadaver.

If the animal, having been overwhelmed by a residue from the curare, nevertheless does not die (and this will depend upon the strength of the residue, and upon the resistance of the animal), then the first-named symptoms do not increase in intensity, but will last longer, and the animal, recovering by degrees, obtains the use of its limbs, usually in two or three hours. The following day the effects are entirely gone. But, death having taken place, the autopsy, made without delay, reveals the heart continuing to beat, and electricity, applied with Pulvermacher's forceps or the apparatus of Du Boys-Reymond, demonstrates that in most small animals, particularly in frogs, the motor nerves are no longer excitable, whilst the muscles have preserved their electrical contractility.

Larger animals, according to Messieurs Vulpian and Pelican, offer some peculiarities which should be observed, viz., that the sensitive nerves in all cases remain intact; and this is certainly established by the numerous signs and characteristics which have been noted.

We pass now to the chemical effects, which, so far, may have appeared purely secondary.

In this regard there is little to say concerning the reactions capable of revealing the presence of curare. We shall not refer to the examinations which should be made of the urine of a victim or of animals experimented upon, with the view of finding sugar; the presence of this in the urine is one of the prominent symptoms of poisoning by curare,

and one that should not fail to be sought after. Indeed, our experience confirms that of M. Claude Bernard, and other physiologists, that sugar is to be found in the urine of patients who have been treated with curare either subcutaneously or by enemata. But this sugar cannot be detected within about two hours after giving the medicine.

Finally, it is to be observed, if the poisoning has been effected with curarin, chemistry offers a useful expedient, but not a sufficient one. If this alkaloid is well prepared, it presents under a small volume a body which, M. Preyer says, is almost without parallel in toxic energy.

Among the reactions at present known with curarin, are as follows:

1st. It is colored blue by pure, concentrated sulphuric acid. This valuable character, when it exists, distinguishes curarin from strychnia. 2d. It is made purple by nitric acid. 3d. It becomes violet with the bichromate of potassa triturated with a little sulphuric acid. These two last reactions it has in common with strychnia.

It is apparent then that the chemistry of this poison does not enter into the problem with which we are now occupied, notwithstanding the chemical investigation of other like substances, so celebrated in crime and misfortune, has been of capital importance; still it should not be neglected, since it has a foundation and support in physiological experience.

And now with reference to our practical applications; if, as has been said, chemistry gives us in a definite residue reactions common to curarin and

strychnia, the hypodermic injection of a portion into an animal will afford certain signs, and enable us to arrive at a scientific conclusion. (*Annales d'Hygiène.*)

SUBCUTANEOUS USE OF STRYCHNIA IN AMAUROSIS.

4 The following application of strychnia by the hypodermic method merits attention.

A young girl of 22 years, well built, menstruating regularly, subject to headache, was seized a few months since with a feebleness of vision; among other things, having a periodical strabismus diverging to the left.

Dr. Spaeth examined her eyes with the ophthalmoscope, and found nothing. His diagnosis was: an incomplete functional paralysis of the retina, without appreciable organic alteration.

Local bloodletting, purgatives, pediluvia, &c., were successively tried, but without benefit. Finally, hypodermic injections of strychnia were used, and at the expiration of three weeks the sight was completely restored. (*Wurtemberg Correspond. Blatt*, 1865.)

LAUVIN ON THE CALABAR BEAN IN NERVOUS AFFECTIONS.

The author has employed the Calabar bean with success, in chorea and convulsions.

ANÆSTHETICS.—ANTISPASMODICS.

M. J. E. PETREQUIN ON ETHERIZATION
AND THE SURGERY OF LYONS.

A CONTRIBUTION TO THE HISTORY OF SURGICAL ANÆSTHESIA IN FRANCE.

Among the discoveries which do honor to our age, history delights to record that of anæsthesia applied to surgery. To abolish the pain of operations had long been the cherished dream of surgeons, but one not realized until anæsthesia presented itself, a precious victory for suffering humanity.

Unfortunately, the introduction of chloroform changed the scene: everywhere where this agent was used to the complete abandonment of ether, from time to time misfortunes happened, of which many were never known! M. Diday and I opened a campaign in favor of ether, which we had always found sure and innocent; and since 1849 M. Couisson has regarded us as avowed partisans of etherization.

Messieurs Gensoul and Rodet were induced to enter the ranks with us in behalf of ether, while our other confreres, like those in Paris, pronounced for chloroform. Accidents, at that time misinterpreted, engaged their consideration, without bringing any light; when M. Malgaigne, made famous by his report upon the subject, contributed in directing attention to the true cause of death, and in inducing that savant body to formulate so-called prophylactic rules for its administration; and these events have

too often proved useless. Victim followed victim, and yet the reign of chloroform, none the less, by degrees became universal.

A scientific reaction manifested itself among those outside of Paris; but unfortunately, under the pretext of eclecticism, the greater number erred, in endeavoring to reconcile the two ideas.

At Lyons alone was this reaction straightforward; we nailed here our banner to the mast, and, after three years' experience, I believed it to be my duty to pronounce publicly, in solemn assembly, my conviction in favor of rectified ether, to the exclusion of chloroform. In 1850 I ascertained with regret that ether was almost forgotten at Paris, and that the rage for chloroform had become general. Nothing seemed to dispel their delusion.

I determined to ascertain the causes which had operated against the common use of ether in making its administration more difficult and imperfect; and I referred them to three principal facts:

1st. The instruments were imperfect, complicated, cumbersome, and generally defective. The invention of the etherization bag, by a physician of Lyons, was a fortunate simplification, and realized great progress for etherization; it being a most simple and convenient apparatus, and one fulfilling every indication.

2d. The insufficiency and impurity of the ether. Prior to the discovery of etherization in 1847, there existed in the shops only an ether of 56 degrees (0.758 sp. gr.), which is too feeble to etherize; and moreover it was more or less contaminated with

sulphuric acid, hydrated alcohol, oil of wine, empyreumatic oils, &c., substances which gave it a disagreeable and irritating odor, provocative of cough, sneezing, and nausea. This ether etherized badly, and gave rise to a nervous agitation, and a kind of intoxication, before the supervention of sleep. Those who abuse to-day etherization are beyond the limits of the question; their criticisms only have reference to imperfections which have long ceased to exist, for now the faults of impurity and weakness have been removed. Thanks to persevering efforts, we have succeeded in getting rid of its impurities by manipulations which are commonly known, until it has been concentrated to 62 or 63 degrees (.735 to .731).

The surgery of Lyons has had a considerable influence upon the business of the pharmacist in this respect; prior to 1847 no ether above 56 degrees could be obtained, but in 1849 to 1850 ether rectified for etherization was in the hands of all the first-class druggists of our city.

3d. It was, finally, the unskilfulness of operators, with their numberless preparations for the process; it was this groping in the dark, which rendered the début of ether difficult, while when chloroform appeared everything was ready, and the beginnings fortunate. It is the remembrance of these inherent difficulties at the outset, that has weighed heavily upon ether in the struggle with its rival, which entered the lists free from any embarrassing history. From my long experience, I believe the following to be the best process for administering ether: The patient should lie down, with his head slightly elevated,

to avoid swallowing any of the anæsthetic. At first five or six drachms of ether are poured upon the sponge of the bag, and I recommend the patient to make deep inspirations, and then, closing the opening of the bag with the plug, I double the dose. I proceed silently, without speaking or replying to the patient's questions, causing his eyes to be covered with a handkerchief, in order to screen the surroundings from him. Generally, anæsthesia takes place quickly and quietly. Watching the respiration and circulation will prevent accidents. Generally, the pulse is at first quickened, then it becomes quiet, and approaches the normal rhythm; if it should become small and hard, irregular and feeble, it will suffice to remove the ether, and admit air. With regard to the respiration, it is at first shortened and retarded, then it becomes more natural. If it should be seen to become painful, irregular and gasping, the ether must be removed and recourse had to fanning. With these precautions I have never had a case of death, or even a grave accident, to deplore from the use of this agent.

In 1855 I returned to Paris. Ether had gained ground at Lyons; Messieurs Colrat, Barrier, and Bonnet, and after them all the surgeons of this city had rallied to our side. Similar progress was observed in America, Ireland, Scotland, Piedmont, &c. At Paris the recent publications of Messieurs Robert and Jobert treated only of chloroform; and it only was used in the hospitals. M. Dorvault (4th edition of "L'Officine," 1855) only mentioned ether of 56 degrees, and went so far as to say, that the

"inhalation of chloroform is less dangerous than that of ether, notwithstanding the deaths recorded from it!"

That was not the truth, which was, however, found in the testimony of M. Velpeau: "With chloroform there are cases where death may happen, even when administered with the greatest prudence, and according to every rule which science has laid down" (31 May, 1858). The obvious conclusion then is that its use is never unattended with danger. In 1859, M. Hervey de Chagny, convinced like us, of its perils, brought the subject before the Chirurgical Society. Undoubtedly this body, doubtless on account of the usual defects of etherization, made a decision little in accordance with facts: ether was pronounced powerless and accused of a thousand other inconveniences and dangers that we had never seen. M. Barrier appealed from this decision to the Medical Society of Lyons which had followed all the phases of the question; he concluded thus: "If ether is less prompt in its action, more disagreeable in its odors, yet it is infinitely less dangerous and its success is no less thorough than when chloroform is used. To ether then surgeons should give preference." My colleagues did me the honor to request me to open the discussion.

I recited the fact that ether had for two years before the triumph of its rival, had occasioned accidents; but exactly was chloroform introduced the poor male had numerous cases from its use." M. Barrier estimates the deaths from chloroform at several hundred; from ether it is estimated that the num-

ber is very small, and at Lyons not one. This is a first-class argument in its favor. Moreover, if analysis be made of all the cases attributed to ether, it will be found that, in several, death only supervened two or three days afterwards, and in some not until from five to fifteen days; and that, furthermore, the operation had been followed by grave complications, independent of the etherization, such as hemorrhages, &c.; and this reduces the proportion of deaths attributable to ether to a very low degree.

It is far otherwise with chloroform; its victims are numerous, and the accidents are so prompt and rapid, that a direct relation of cause and effect is traceable. These accidents cannot be disguised under the head of "sudden deaths," for they have all the characters of those happening in animals in which they are invoked with chloroform. This is not all: with ether, death is gradual, and not instantaneous; and experience teaches that it may always be arrested by simple means; and, better still, it may be prevented by watching the circulation. On the contrary, with chloroform, the patient often dies as if struck by a thunderbolt; the accidents are so violent and sudden that they can, in general, neither be arrested nor prevented,—a great disadvantage compared with ether.

It is in vain that classifications have been made, reserving for chloroform strong constitutions, and for ether debilitated subjects, for we have seen the most robust patients overcome by chloroform. No reliance is to be placed in the selection of the pa-

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It is in vain that classifications have been made, reserving for chloroform strong constitutions, and for ether debilitated subjects, for we have seen the most robust patients overcome by chloroform. No reliance is to be placed in the selection of the pa-

tient, nor in the chloroform, or the dose of this terrible agent.

It induces sleep more quickly, it is true, but it is in this great rapidity of action that its hurtfulness resides. Indeed, we are too prone to exaggerate this advantage; it seldom takes less than three or four minutes to induce sleep with chloroform, while, on an average, we obtain the same results with rectified ether in six or seven minutes. Who then would wish, for a minimum difference of two or three minutes, to endanger the life of any one? And, finally, it has been wrongly contended that ether is incapable of producing a profound anæsthesia, with muscular relaxation; for these are results, which, for fifteen or sixteen years, we have obtained daily, in a most complete manner. This is a fact so commonly understood at Lyons, that there is not one of our assistants who is unable to produce it at pleasure. Rectified ether satisfies all the requirements of capital operations, without threatening the life of the patient. I decide, therefore, in its favor to the exclusion of its rival. The surgical corps of Lyons evince in this regard a wonderful accord. Messieurs Diday, Desgranges and Rodet speak emphatically in favor of ether, and I regret that lack of space does not permit me to sketch here an outline of their able argument. Messieurs Rollet and Bouchacourt yielded to their judgment, and the "Medical Society of Lyons" unanimously passed resolutions in favor of ether, as less dangerous than chloroform, quite as well adapted to anæ-

thetizing, and, finally, to be preferred by surgeons, to the exclusion of chloroform.

The year 1859 did not pass without the medical press of Paris assuming a significant tone, upon the occasion of a new instance of death happening in one of the hospitals of the Capital. M. Amédée Latour, in the *Union Médicale*, and M. Dechambre, in the *Gazette Hebdomadaire* (November, 1859), uttered important words, which may be considered as seed for the future. To-day seems to be an opportune moment to refer to it, since there is some evidence of a reawaking of minds; and even those who were most bitter in proscribing ether, deem it their duty to proclaim the necessity of taking it up again. This is nobly to repair an error; as to myself, I only ask that the declaration be heard: "During the last fourteen years in which chloroform has been abandoned at Lyons, and an ether rectified to 62 or 63 degrees generally made use of, in the city as well as in hospital, we have not had one single death to deplore. This is a lesson which deserves to be studied and remembered. But, if I desire my voice to be heard, it is because I wish to render a service to the sick, in preserving those whose existence is threatened by a dangerous agent; and to my confreres, in sparing them the remorse of having, by malpractice, threatened the life of one of their patients. The sweetest recompense to which ambition leads, would be to contribute my quota in putting an end to the unpleasant martyrology of chloroform."

Apropos of the communication of M. Pétrequin, M. Velpeau speaks thus:

"The note of M. P. indicates a new phase in the history of etherization. Suggested and announced at first by Mr. Jackson, the chemist; first applied by the dentist Morton, and then to capital operations by the surgeons of Boston; put into practice in 1846, at Paris, and soon after in the whole world, etherization was attempted at the outset only with ether.

"It was then reproached with fatiguing and irritating the patient, causing cough and agitation, and with not succeeding in every case; and some of our colleagues have not perhaps forgotten the struggle which M. Roux and I had, in these very halls, in 1847, with M. Magendie, to maintain its being admitted to the rank of a great surgical conquest.

"But all opposition ceased two years later, when it was demonstrated that chloroform, a chemical agent discovered by French savants, experimented with upon animals by M. Flourens, and substituted on every occasion for ether by M. Simpson, acted more quickly and surely in producing a calm, and a sleep more profound than ether.

"From that moment this latter was scarcely ever spoken of, although everywhere the expression 'etherization' has been retained, but as a generic term, synonymous with anæsthesia, by whatever substance the insensibility be produced.

"Chloroform had here and there a victim, and complaints and protests were heard from time to time against its dangers. At Montpellier, M. Bouisson, an able gentleman, and our correspondent, has himself echoed these reproaches in his treatise on

etherization, written twelve years ago; while the surgical corps of Lyons have always maintained that ether was to be preferred to chloroform.

“This is the thesis which M. Peterquin comes to defend before the Academy. ‘Not one death,’ says he, ‘has happened from ether during the fifteen years that nothing else has been used at Lyons, whilst the number of deaths from chloroform is considerable. With pure ether of 62 or 63 degrees, the first objections to this agent have disappeared, so that to-day it has all the advantages of chloroform, and none of its dangers.’

“Now, shall we accept without a word the opinions of the school of Lyons? No. If the dangers or uncertainties of ether are explained by its impurities, and by its unskilful use, may not as much be said of chloroform?

“During the past fifteen years, I have certainly subjected several thousand cases to the influence of chloroform, and never have I had the pain to see one die from its effects!

“The same may be said, to my knowledge, of several of the most active surgeons of Paris, and of the entire school of Strasbourg. M. Sédillot, at the head, maintains this view, and does not let himself be moved by the Southern school.

“It must not be forgotten that death has followed ether in a certain number of cases, when it only was used in practice; so in this respect there would be a question of proportion to decide.

“My idea is that it would be most wise to preserve

the two methods, and each, brought to perfection, may have its distinct applications."

C. SÉDILLOT ON THE SUPERIORITY OF CHLOROFORM AS
AN ANÆSTHETIC AGENT.

1st. Chloroformization is an art which requires unremitting attention, a great deal of skill and experience.

2d. Every time that recourse is had to chloroform there arises a question of life and death.

3d. Chloroform when pure and well-employed never kills.

M. Velpeau has declared to the Academy that, for more than fifteen years past, he has administered chloroform to several thousand patients without having a single death from it. The same success has been had at our civil and military clinics, although we have used chloroform with the greatest boldness, under every circumstance, and at all ages, without acknowledging the existence of idiosyncrasies opposed to its use.

In pretending that pure chloroform, when skilfully managed, can be followed by death, and that patients may be overwhelmed notwithstanding every precaution, it is necessary to demonstrate that this accident has happened in the hands of one of its declared advocates; and since experience proves that their practice is exempt from mortality due to it, whilst that of practitioners less skilled furnishes the most frequent examples, it is, as a matter of course, necessary

to attribute this result to other causes than simple hazard.

We have not deemed it necessary to point out any special rules. In pointing out the danger we furnish at the same time the means of avoiding it.

It is important, shall we say, to permit, above all, perfect freedom of respiration, and to intermit with the inhalations, in order to avoid the progressive, perilous effects.

Chloroform possesses the remarkable property of continuing its action upon the economy after the cessation of its use. We had shown in 1848 that death could take place in animals, in whom the respiration and circulation seemed to be neither suspended nor threatened, and notwithstanding they were freely supplied with air, and the chloroform taken away. The indication was evident, viz., always to remove the anæsthetic before muscular relaxation took place, and to watch carefully its effects. These simple precautions, well understood and well applied, give assurance of the harmlessness of chloroform; and our colleagues in the army have used it with the greatest success, and under the most unfavorable auspices.

M. Lustreman, chief physician and professor at the "Val-de-Grâce" has sent me a most instructive note on the subject. "During the campaign in the East," says this skilful surgeon, "I have given chloroform to the wounded, exhausted by scurvy, diarrhœa, traumatic fever, and profuse suppurations prolonged by the foul air of hospitals. Those poor moribund soldiers, sent from the Crimea to Constantinople, had their only chance for safety in late operations.

All asked to be put to sleep, and I only had reason to felicitate myself for yielding to their requests. Several recovered, and not one experienced the slightest accident referable to chloroform. And I may add, they were anæsthetized in their beds, taken to the operating-room, amputated, their wounds dressed with the deliberation which the tendency to hemorrhage required, and, finally, were taken back to their beds without the chloroform being for one moment suspended. Thus, even in a case where life seems almost extinct, complete anæsthesia may be maintained for a long time without danger."

There can then be no doubt of the possibility of divesting chloroform of all its dangers. If we are asked why we continue to use it, and to recommend its usage in preference to ether, we reply with M. Velpeau: "Chloroform acts more quickly and surely, and brings a calm and a sleep more profound."

The rapidity and persistence of anæsthesia from chloroform constitutes its superiority. The awaking from it is slow and quiet; that from ether is rapid, untimely, and noisy. With chloroform we may take the patient by surprise, operate upon the eyes, face, within the mouth, &c.,—operations impossible with ether, of which the effects, though long to induce, are quick in passing off.

Chloroformization, prompt, easy and persistent, adds then to the resources and power of surgery, without diminishing its safety.

Art rises, and develops itself in triumphing over difficulties; it is arrested, and retrogrades in yielding to them.

GRIFFITH ON THE INHALATION OF CHLOROFORM IN
CHOLERA.

This is an application of chloroform which requires, as all powerful remedies do, prudence, and a judicious selection of the moment for its administration. *It is as early as possible during the invasion* that the author prefers to commence with the inhalations, or, at latest, as soon as depression of the forces begins to be manifested, and the period of collapse to be impending; but he does not hesitate to have recourse to it even when this period is fully established. Thus in cases where the grave symptoms are not developed gradually, but appear suddenly with great intensity, he administers chloroform without delay, as certain to procure the patient immediate relief.

In those cases, where Mr. Griffith has adopted this mode of treatment, if there were cramps, they were quickly allayed; if there was emesis, it was sometimes quieted, and sometimes altogether arrested; if there were colic and griping diarrhœa, these were materially modified; whilst, in the meantime, the functions of the heart were improved, as evinced by the sounds becoming more audible in the precordial region, by the pulsations becoming more energetic, by the return of the radial pulse, and by a disappearance of the lividity of the face and extremities. (*Med. Press and Circular*, August, 1866.)

OUDIN'S ANTISPASMODIC MIXTURE.

R. Chloroform,	3j
Essence of Orange-peel,	gtt. v
“ Bitter Almonds,	gtt. iij
Alcohol, 90 deg. (.823 sp. gr.), . .	3iij, 3vj
Sugar,	3x
Water,	q. s.

To make 25 oz. Dose, one or two wineglassfuls.

Useful in emesis, colic, diarrhœa, hemorrhages, dysentery, amenorrhœa, and as a preventive against cholera.*

CHLOROFORM AND ETHER TO DESTROY THE LARVÆ WHICH ATTACH THEMSELVES TO MAN.

After numerous experiments and fruitless trials, M. Dauzats, senior-assistant druggist to the hospital of Cordova, aided by M. Jacob, senior-assistant physician, discovered the destructive action of chloroform, which was thereafter used by inhalation and injection with the greatest success. All of the patients upon whom it was tried were relieved, as if by enchantment.

* The essences above mentioned not being officinal in the United States Pharmacopœia, the quantity of that of the orange-peel may be conveniently replaced by one ounce of the tr. aurantii, and that of the bitter almonds may be replaced by five drops of the oil of bitter almonds dissolved in one ounce of alcohol.

In this event, of course it would be proper to diminish *pro tanto* the quantity of alcohol ordered.—TRANSLATOR.

In seven cases, only one proved fatal by reason of the frightful ravages which the larvæ had made in the nose and pharynx for more than one week. M. Jacob reports an eighth case, in which two hundred and twenty larvæ were expelled by this means. Although inhalations may succeed in causing these larvæ to be detached, and to fall in large numbers, still it is prudent to have recourse to injections of equal parts of chloroform and water. This will destroy, almost instantly, those which are deeply imbedded, and may be considered infallible in this respect. As a substitute, Professor Jarjavay has employed ether in an analogous case, which presented itself at the Beaujon Hospital.

SIMPSON ON CHLOROCARBON (THE BICHLORIDE OF CARBON OF REGNAULT) AS AN ANÆSTHETIC.

The first effects of chlorocarbon are very similar to those of chloroform, but it requires a longer time to produce the same degree of anæsthesia, which, furthermore, is longer in passing off. In experimenting upon animals, a rabbit and a mouse, under identical conditions, were subjected to the same dose of chloroform and chlorocarbon, and experienced a depressing influence on the heart with both, but to a much greater degree with the latter. Its use, therefore, is more dangerous.

Used upon a parturient woman for one hour, it produced ordinary anæsthesia, but towards the last the pulse became extremely small and feeble. On the contrary, with another woman who had pre-

viously been subjected to chloroform, no different effects were manifested, although she had valvular disease of the heart. In an operation for vesico-vaginal fistula, one in which the uterine neck was divided; in one for dilatation of the vagina; and in one for the application of caustic potash upon a large nævus in a child, chlorocarbon acted perfectly well as an anæsthetic. The child remained asleep more than one hour after the operation, with a pulse rapid and feeble during the entire anæsthesia. A mouse subjected to its influence breathed imperfectly for awhile upon the table, and then died.

Applied upon the skin, chlorocarbon is much less stimulating and irritating than chloroform, and may advantageously be substituted for it in sedative liniments.*

Injected as vapor in two cases of grave hysteralgia, it quieted the pain immediately, and the relief was such, with the first case, as to permit her to enjoy a sleep, of which she had been deprived for several weeks.

An ordinary syringe with the large end plunged into a vial containing about one ounce of chlorocarbon will answer the purpose. Used per rectum, it likewise proved to be more sedative than chloroform.

Used hypodermically, in doses of from 10 to 20 drops, it has equally well quieted pains of the thoracic and abdominal walls, without being followed by nausea, which so frequently results from the

* It has a long time been used for this purpose.

preparations of opium. It may therefore be used externally as sedative and anæsthetic, in preference to several other analogous compounds.

In this regard the experiments of the able Scotch professor deserve to be repeated. (*Med. Times and Union Med.*)

BIGELOW ON RHIGOLENE AND OTHER LIGHT PETROLEUM OILS AS LOCAL ANÆSTHETICS.

The author believes that he has found an efficacious anæsthetic agent in one of the numerous multiple products of the distillation of petroleum, which has already been employed for the same purpose. Such are benzolene, kerosene, kerosolene, gazolene, in which the degree of volatility of each constitutes its only difference. In a communication to the Medical Society, on the 9th of April, he brings to its notice Rhigolene, etymologically signifying extreme cold (*ῥίγος*), having the euphonic termination of its congeners. It boils at 70° Fahr. (21 Centigrade), which marks it as the most volatile of the hydrocarbons hitherto obtained. It is also the lightest liquid known, its specific gravity being only 0.625, while that of kerosolene, previously employed by Professor Simpson for similar purposes, is 0.633 and its boiling-point 90° Fahrenheit (32° Centigrade).^{*} Its extreme volatility gives rise to a sudden and in-

^{*} The original makes 70° Fahrenheit equal 38° Centigrade, and 90° Fahr. equal 58° Cent., but this is obviously incorrect.—
TRANSLATOR.

tense cold, capable of freezing the skin in five or six seconds. If ice did not immediately surround the bulb of the thermometer, doubtless a much lower temperature could be demonstrated with the ordinary atomizer than with the apparatus of Richardson with its concentric tubes.

M. Bigelow employs simply a bottle, through the cork of which passes a metal tube to which is adapted an air tube bent at right angles a little distance from the neck, so that air may not enter the bottle, as it does in the spray producer. Rhigolene evaporates even by the heat of the hand in holding the bottle, and it suffices to empty it promptly to obtain cold fifteen degrees below zero Fahrenheit. Its volatility is such that bottles containing it should be tightly corked to prevent its evaporation, and to preserve its properties. He concludes that it is superior to ether, which boils only at 96°, on account of its great rapidity of action, its low price, and the absence of odor. But so far there are no experiments corroborative of these statements, and the extreme inflammability of Rhigolene will always be an obstacle to its being brought into common use. At all events, comparative trials are necessary to demonstrate its superiority. We shall wait for them before giving a decision.* (*Boston Med. and Surg. Journ., April, and Union Méd.*)

* With respect to Rhigolene, it is probable that it is much better known in this country than in France, and every physician, who is in the habit of using local anæsthesia by means of the atomizer, gives the preference to Rhigolene over ether. The properties attributed to it in this article are correct, except

LOCAL ANÆSTHESIA.

Numerous researches have been made this year into local anæsthesia; it is a subject worthy of the greatest interest, for now patients and, even, surgeons are in dread of chloroform. I reproduce here a beautiful analysis of the subject, made by M. Jeannel in the "Journal de Bordeaux."

"The medical world is occupied at present with the means of obtaining insensibility during surgical operations, not by the inhalation of ether and chloroform, but by the local application of anæsthetic agents upon the part itself to be operated upon. Singular fact! ether and chloroform, whose vapors when inhaled plunge man and animals into a profound sleep, by producing an absolute insensibility, cause only irritation when applied in liquid form to the skin or other organs.

"It has therefore been necessary to renounce the hope of thus producing insensibility of parts which are to undergo the action of cutting instruments, and to endeavor to accomplish it otherwise.

"It has long been known that cold renders the skin insensible. Not being able to produce a local anæsthesia through the dynamic operation of remedies, recourse was had to their physical action in refrigeration, and it is here that the inventive genius of man has had full scope.

that it has a decided ethereal odor with a strong impregnation of creasote. It is now manufactured on a large scale in Boston.—TRANSLATOR.

"Hunter and Moore, in the last century, and later Liegard, of Caen, proposed to apply, for a certain time preceding an operation, bladders filled with ice; but the effects were too superficial. M. Velpeau replaced the ice by a mixture of ice and salt, which is used for icing champagne; this mixture, which produces a cold of 12 degrees below zero (Centigrade),* succeeds very well in abolishing the sensibility of organs, but it has the inconvenience of freezing them if applied too long. Moreover, the return of the living tissues from the congealed state is ordinarily attended with a violent pain, and is frequently followed by gangrene. Ice and the refrigerant mixture were therefore abandoned, the first as insufficient, the last as dangerous.

"Next, it was attempted to render the parts insensible by means of liquid ether poured upon them drop by drop, the evaporation being accelerated by the use of a pair of bellows; and the results, while somewhat favorable, were still unsatisfactory.

"Then Dr. Richardson, of London, thought of using the apparatus invented by M. Sales-Girons for atomizing mineral waters, and ingeniously modified it, so that he might be able to direct upon the part to be operated upon an extremely fine jet of ether reduced to an impalpable powder by a brisk current of air. It seems that the refrigeration thus produced is nicely circumscribed, and produces, without danger, a numbness sufficient at least for minor operations.

* 12 degrees below 0° Cent. corresponds to 10 degrees above 0° Fahrenheit.—TRANSLATOR.

Already several instruments, all based upon the 'pulverizer' of Sales-Girons, have been devised.

"M. Guérard has presented us with one which effects local anæsthesia by the vaporization of ether. It is composed:

"1st. Of a bottle, which is inverted to favor the escape of the liquid by its own weight.

"2d. Of a system of two elastic balls, one being the bellows, and the other the reservoir. A continuous current of air is maintained by these balls, and this draws with it a capillary stream of the liquid, of which the rapid evaporation gives rise to a considerable depression of temperature. The system of two balls is borrowed from Richardson's apparatus.

"This instrument has been used experimentally with success by several surgeons; it offers the advantage of producing an uninterrupted jet of air saturated with ether, an extremely rapid evaporation, and a low degree of temperature corresponding to this rapidity."

I give here the opinions of the most competent authors who have published works on local anæsthesia during the past year. (*Journal Méd de Bordeaux.*)

TILLAUX ON LOCAL ANÆSTHESIA.

Local anæsthesia is a precious means, little used hitherto, and one which surgeons should bring into general use as soon as possible. It is adapted, principally to minor operations, in all cases where it suffices to make incisions into the skin and cellular tissue.

The refrigerant mixture of Arnott (ice and salt,) gives good results; but the painful reaction which sometimes follows its use, and the comparative difficulty in applying it, should render ether preferable.

Richardson's apparatus has caused local anæsthesia to take a grand step. It projects the ether pulverized, whence its superiority over that of M. Guérard, to whom, however, the priority of idea belongs.

LEFORT ON LOCAL ANÆSTHESIA BY PULVERIZED ETHER.

Seven to ten seconds suffice to depress to 20 degrees* a thermometer, upon the bulb of which the ether jet is directed; in less than a half minute the back of the hand was made cold and insensible to a point which rendered the introduction of a needle painless; we have in this way opened several buboes, without the patient experiencing any pain. The pulverization of ether has the advantage of rapidity and thoroughness over the old method, and over refrigerant mixtures, a greater facility of application. In this way teeth have been drawn without entailing any suffering upon the patient; and the process is of real value in operations which concern only superficial parts, above all, the opening of abscesses. (*Gazette Hebdom.*)

* 20 deg. below 0° Cent. (?).—TRANSLATOR.

BETRÈZE AND BOURDILLAT ON LOCAL ANÆSTHESIA.

Here is the conclusion of an interesting paper published in the *Union Medicale* for June: "There results from the observations reported: 1st, that local anæsthesia with ether is destined to be of great service in operative medicine; 2d, that it is principally indicated in superficial and quick operations; 3d, that it is insufficient in capital and long operations, for which general anæsthesia alone is applicable; 4th, that pulverized ether is preferable to other agents; 5th, that it is not to be used in plastic operations, in cauterizing with the red hot iron, nor in operations upon mucous membrane generally; 6th, it does not exercise any influence upon the progress of wounds."

LOCAL ETHERIZATION FOR REDUCING STRANGULATED
HERNIA.

This is an application of etherization, which, skillfully and prudently made, can render great service.

"A man, aged 35, affected for two years with a left inguinal hernia, and having never worn a support, had suffered for 36 hours with a strangulation produced by a violent effort. The tumor was painful, and there were continuous eructations with vomiting. Mr. Wallace applied the taxis; and Mr. Barclay, in turn, renewed these efforts but without success, although opium and calomel had been administered.

Before operating, Mr. Barclay suggested the use of Richardson's ether-spray instrument.

He directed the jet on the tumor, and at the expiration of forty seconds the skin became blanched, when the instrument was suspended. Upon reapplying the taxis the hernia was immediately reduced as if by magic. (*British Med. Journal.*)

MAGITOT ON THE APPLICATION OF ANÆSTHESIA WITH ETHER TO THE EXTRACTION OF TEETH.

We reproduce here without commentary the conclusions of a paper of M. Magitot, published in the *Bulletin de Thérapeutique* of the 15th of June.

From the facts observed, we conclude:

1st. That the introduction of pulverized ether into the cavity of a tooth, may determine a sense of suffocation which interferes with, or interrupts its application, or may induce, by its rapid condensation, slight burns of the buccal mucous membrane, and of the lips.

2d. That, confined within the mouth, the evaporation of the ether is less rapid, and consequently less efficacious than in open air, and on the skin.

3d. That the thickness of the hard layer of the teeth, and its feeble conductivity, permit with difficulty complete refrigeration of these organs.

4th. That its application is impossible for parts situated deeply within the mouth; and its use should be reserved for the teeth situated upon the anterior portion of the dental arch, or for those which are isolated.

5th. That, finally, the only circumstances under which its action is truly useful and thorough, are those, where a tooth, having become inert by the loss of its pulp, causes trouble through its peridental membrane and the gum, these parts, by reason of their relatively superficial situation, being susceptible to being anæsthetized.

A. PRETERRE ON THE PROTOXIDE OF NITROGEN AS AN ANÆSTHETIC.

When, towards the end of the last century, Davy pointed out the anæsthetic properties of the nitrous oxide, he drew the practical conclusion that it might be used with advantage in surgical operations unattended with much loss of blood. Such a hope, founded upon logical deductions, was well calculated to stimulate the zeal of experimenters, and efforts were instituted in England, France, Germany, and Sweden, but with results differing from those which Davy had obtained.

In 1844, Horace Wells repeated with success on himself and other persons the experiments of Davy; he was able to extract teeth without pain. This fortunate beginning gave him the idea of making a public exhibition, but the attempt failed, and the cause of nitrous oxide was seriously compromised, particularly, when a short time afterwards the anæsthetic properties of ether, and a little later those of chloroform, were discovered.

About two years ago, some American dentists un-

dertook to examine again the properties of the protoxide, and they came to the conclusion that this gas should not be consigned to oblivion, since it was able to render much service in certain cases; and now it is used by them daily.

Knowing these fortunate results, M. Preterre himself, wishing to study the question of the general anæsthesia induced by this gas, made several trials with success, and made known in a short work the following conclusions:

1st. The protoxide of nitrogen has the property of inducing an anæsthetic sleep of short duration.

2d. When the gas is employed perfectly pure, it may be respired without danger, and never gives rise to accidents.

3d. For all operations of short duration, as extraction of teeth, the ablation of imbedded nails, opening of abscesses, &c., it is to be preferred to all other known anæsthetic agents.

Here again is reopened the study of the question of anæsthesia by means of the protoxide of nitrogen; the conclusions of M. Preterre call for new experiments, since an inoffensive, prompt and efficacious anæsthetic agent would leave nothing to be desired in the extraction of teeth. (*Journ. Pharm. et Chim.*)

M. Chevreul calls to mind that Proust and Vauquelin had not found this gas an agreeable anæsthetic agent. M. Dumas says it is with difficulty obtained chemically pure.

POTION CONTAINING MUSK. (Lallier.)

The musk is weighed, then triturated with some drops of boiling water, and afterwards this latter is added in larger quantity, according to the dose of musk prescribed; this solution is then added to the necessary vehicle, mucilaginous or not. In cooling the musk loses, it is true, a portion of its solubility, but it is then precipitated in the form of a very fine powder, which easily mixes with the liquid by agitation. It may thus be taken by the patient without any remaining in the mouth, as is the case when prepared with cold water.

By this process, which does not alter the odor of the musk, we have not found it necessary to have recourse to the mucilaginous vehicle generally advised for the purpose of suspending it. We would advise, if there be no therapeutic contraindication, the use of simple water and a watery menstruum, as preferable to a gummy solution. With water the potion is more limpid, causes less stickiness in the mouth, and may be preserved for a longer time without alteration.

GENERAL STIMULANTS.

ALCOHOLIC LIQUORS IN PHTHISIS.

Messieurs Fustier and A. Tripier have each introduced alcoholic liquors successfully into the treatment of phthisis; but every practitioner understands, without it being necessary to insist upon it here, that the use of this energetic remedy must be continually watched, not only with respect to the dose, but also for the proper opportunity for administering it, depending upon the condition of the patient.

ALCOHOL IN WHOOPING COUGH. (Tripier.)

It was through a consideration of the severe fits of coughing in phthisical patients, followed by vomiting as a reflex phenomenon having its point of departure in the stomach, that I was led to the introduction of alcoholic liquors into their diet. Although the relation which, in individuals attacked with whooping cough, exists between the paroxysms of coughing, the expectoration, and the disturbed state of the stomach, are more difficult to define, yet there is between these paroxysms and those of phthisis at the beginning of digestion a certain similitude which has induced me to try the same remedy. A tablespoonful of pure brandy, or in children, diluted with its volume of sugar and water, administered at the end of a meal enables it

generally to be retained, and procures a night's rest for the patient. A sensible amelioration of general condition follows very closely upon this substitution of a small dose of grog for the usual ptisan.

In these cases, any more than in phthisis, I do not consider the alcohol as a specific, capable of effecting a direct cure, but only as a useful adjuvant, inasmuch as it places the organism in a favorable condition for a cure, either through natural causes, or by remedies addressed more immediately to the pathological state.

ALCOHOL IN PNEUMONIA. (Trastour.)

The indications for alcohol appear to me to be evident under the following conditions: The general feebleness of the patient, the absence of reaction, pallor of face, coldness of skin, purulent expectoration suggestive of gray hepatization, extending of the inflammation, improbability of a spontaneous resolution, old age, and the excessive depression of antimonials; these have decided me to have recourse to this remedy, whose rapid and energetic effects have been of advantage to many. It is impossible to give any fixed rules for the administration of alcoholic liquors in pneumonia, but every one will perceive their utility in witnessing the salutary modifications which they induce in cases laboring under the conditions indicated; and it would be easy for a judicious and experienced physician to withhold the remedy early enough to avoid a too great alcoholic pulmonary irritation.

I neither as a matter of course always adopt, nor advise, the systematic use of alcoholic liquors.

Often I commence the treatment entirely otherwise; for example, by tartar emetic with digitalis, remedies that I usually employ when *bloodletting is not, or is no longer, proper*, finding that they reduce, often by the next day, the number of cardiac pulsations one-third or one-half. M. Marezy, who has observed the rapid and futile contractions which the heart undergoes when the pulmonary circulation is interfered with, can bear witness to this therapeutic result.

But I must ask, when, in the presence of a pneumonia which does not progress towards resolution, we see the strength of the patient failing; and when there are ataxic, adynamic accidents arising; and when the ordinary remedies are in advance deemed useless, insufficient or dangerous, how can any one decline to use alcohol?

With respect to myself, I consider its use, largely and methodically, as a new and precious resource in the course of acute maladies, and of pneumonia in particular, *whenever there is a depression of the forces*, whether this depression result from age, the disease, the medicine, or from any other cause.

But I make the alcoholic medication always dependent upon the general rather than upon the local condition; and it is necessary to be careful to continue it until the disappearance of the physical signs of pulmonary engorgement, which, as I have before said, may be maintained, and even increased

by it; this state of the lung in no otherwise interfering with convalescence.

In chronic diseases of the heart, also, alcohol is too much neglected. Stokes, and after him, my friend, Dr. Mauriac, in his excellent thesis on the diseases of the heart (1860), have, with reason, insisted forcibly upon the relations both of the muscular fibres of the vessels and of the nerves of the heart to organic lesions of its orifices. The prognosis depends less upon mechanical obstacles to the current of the blood than to the alterations in the cardiac tissue itself. Consequently, Stokes recommends frequently, and justly so, a stimulant treatment, principally with wine, as best supporting the functional energy of the heart. And frequently I have verified the exactness and value of this therapeutic indication.

To conclude, I repeat, with the same author, that there is no local inflammation which contraindicates in an absolute manner the administration of wine, when the general condition of the patient calls for it. I may add, according to M. Béhier, that the prolonged, but prudent and systematic use of alcohol itself, in large doses, is a resource of great value, which we should know how, and dare to utilize in acute diseases. (*Bulletin de Thérapeut.*)

BOTKIN ON CAFFEIN.

Caffein will eventually be an important therapeutic agent, but, for this, it is indispensable that the physiological properties of this feeble alkaloid be

fixed. It would be useful to compare physiologically the bases extracted from tea, coffee and cacao. In the meanwhile, here are several observations which present some interest:

"Under the influence of caffein, the heart's pulsations are slow. It increases rapidly the excretion of urine. The patient soon becomes habituated to it. It produces a burning sensation upon urinating. The dose is $2\frac{1}{2}$ grains (15 centigrammes) during the day." (*Virchow's Archiv. and Gaz. Med.*, Strasbourg.)

COFFEE IN CHOLERA.

M. Jules Cloquet announces that he has received from Belfast, Ireland, a letter, in which the author, Mr. Wallace, pretends to have cured a great many cases of cholera with a strong decoction of coffee. If the cholera poison acts, as Mr. Cloquet thinks it does, upon the nervous system, by producing a true intoxication, a complete paresis of it, it is possible that coffee would not be without benefit. Experience must decide.

ELIXIR OF CACAO. (Réis.)

Take—

Selected leaves of well-preserved cacao, .	3 ounces.
Montpellier alcohol,*	12 "
Sugar,	9 "

* The alcohol first made at Montpellier was made by distilling wine. Any good 90 per cent. alcohol will suffice.—TRANSLATOR.

Break the leaves in large pieces, exhaust them in the displacement apparatus with the alcohol; express the residue forcibly, boil it with 9 ounces of water, and make with this decoction and the 9 ounces of sugar a syrup, which is to be mixed with the tincture first obtained.

After 48 hours filter. One drachm of the elixir represents six grains of cacao.

During the last epidemic of cholera I asked M. Bain, the druggist, to prepare an elixir, No. 2, containing as much as possible of the active principles of cacao, and capable of producing promptly the necessary energetic effects in a case of confirmed cholera.

I have only tried it a single time, but obtained then all the success I could wish for.

Here is the formula for elixir No. 2, one which I believe is adapted to reanimate the failing innervation in cholera or in any other grave disorder which requires a prompt and energetic stimulation.

Take—

Alcoholico-aqueous extract of cacao, obtained in a vacuum at a temperature of 32° (Cent.),						2 drachms.
Water,	.	.	.	.	.	6 "
Alcohol,	.	.	.	.	.	6 "
Sugar,	.	.	.	.	.	6 "
Make a solution.						

One drachm of this elixir contains six grains of the extract of cacao.

STANDARD EMULSION OF COPAIBA. (Jeannel.)

It is known that urine charged by the process of elimination with the principles of copaiba, possesses in a high degree its specific properties, and that it suffices to inject into the urethra, to cure a gonorrhœa, the urine of a subject who has taken a certain dose of copaiba.

This curious observation leads us to think that water charged with a small dose may constitute an efficacious topical application.*

By means of an alkaline emulsion, copaiba may be suspended in water in the desired proportion, that is about one per cent.

Here is a formula for a strong standard emulsion, which may be diluted with water to obtain weaker emulsions, which are all perfectly stable:

OFFICIAL STANDARD EMULSION OF COPAIBA.

Balsam of Copaiba,	10 drachms.
Crystallized Carbonate of Soda (pow- dered),	20 "
Distilled Water,	30 ounces.

Mix in a bottle which will hold 4 pints, shake.

This mixture forms a perfectly homogeneous emulsion, which remains so for several hours. The copaiba separates by the next day, but is emulsioned again by the slightest agitation.

It is this standard emulsion which we recommend for injections in gonorrhœa.

* M. Langlebert has employed for this purpose water distilled with copaiba.

ANTI-GONORRHOEAL INJECTION CONTAINING COPAIBA.

Take—

Of the officinal emulsion,	6 drachms.
Distilled Water,	18 “
Sydenham's Laudanum,	12 drops.

An emulsion is thus obtained whose stability is indefinite, and which contains one per cent. of copaiba, one-half of one per cent. of carbonate of soda. This formula, given as a type, may be varied according to circumstances.

The efficacy of this mode has been proven by a long experience at the military hospital of Bordeaux. (*Bull. de la Société de Pharm. de Bordeaux.*)

HIRTZ ON COPAIBA IN BRONCHORRHOEA.

It is already known that copaiba is frequently used as a remedy in chronic bronchitis.

The following bears witness to the efficacy of this agent in one form of this affection, often so rebellious:

A man of fifty years of age had a loose cough accompanied by an expectoration so abundant that it amounted to nearly one quart daily. This was a clear liquid, transparent, not frothy, slightly stringy, and letting fall to the bottom of the vase a voluminous, white sediment, composed of mucous globules and epithelial debris. Chemical analysis discovered only a little mucus, a great deal of water, and a complete absence of sulphocyanogen,—an evidence that it was not buccal saliva, as its appearance indicated.

This product is nowhere else secreted but by expectoration. Auscultation revealed only slight bronchial sibilus, disseminated throughout the lung, without any signs of lesion. This constitutes the pituitous catarrh of the ancients, or the phlegmorrhagia of Laennec.

The balsam of copaiba was given in capsules, the dose being about one drachm a day. From the third day the expectoration diminished in quantity, without changing in quality. At the expiration of the tenth day of the treatment, the pituitous discharge was reduced to several tablespoonfuls, always resembling the first in character. The patient was very much relieved, the cough nearly disappeared, as did likewise a certain degree of habitual oppression. (*Gaz. des Hôpitaux.*)

BALSAM OF COPAIBA AND CUBEBS IN DIPHTHERITIC SORE-THROAT (ANGINE COUENNEUSE) AND CROUP. (Trideau.)

The following is the manner in which M. Trideau begins his treatment:

For an adult, 2 teaspoonfuls of syrup of copaiba every two hours, and in the intervening hours a tablespoonful of simple syrup containing 15 grains (1 gramme) of recently powdered cubebs.

The formulæ for these preparations are as follows:

SYRUP OF COPAIBA.

Copaiba,	6 drachms.
Powdered Gum Arabic,	4 "
Water,	10 "
Essence of Peppermint,	15 drops.
Simple Syrup,	10 ounces.

The balsam of copaiba is first emulsioned with the water and gum, then the peppermint is added, and lastly the syrup.

SYRUP OF CUBEBS.

Powdered Berries of Cubebs, . . .	4 drachms.
Simple Syrup,	8 ounces.
Mix in a mortar.	

For children the dose should be diminished one-half; that is, to 90 grains of cubebs in twenty-four hours, and a teaspoonful of the syrup of copaiba every two hours.

In severe cases the dose of cubebs may be carried to the extent of 6 drachms for an adult, and 3 drachms for a child.

It often happens that at the end of twenty-four hours the copaiba can no longer be borne, when it will be necessary to suspend it for awhile. Two or three drops of laudanum to every ounce of the syrup of copaiba will render it more easily tolerated.

The disease yields most frequently at the end of three or four days. When it becomes necessary to continue the use of balsams in large doses for a longer time, often a series of accidents arise, which would afford uneasiness if their true character were not known.

There arises a pruritus and itching over the whole body, attended with a slight febrile action, and soon followed by an erythematous eruption, sometimes discreet, resembling roseola, at other times confluent like urticaria. This eruption *never exists with false membranes*; and it happens most frequently when,

instead of cubebs alone, use is made of cubebs and copaiba together.

This treatment has been followed by Dr. Trideau during a severe epidemic in the department of Mayenne, and, according to him, it succeeded each time that it was instituted in the first or second stage of the attack.

Nevertheless, it is necessary to make a distinction, in this regard, between croup manifested at the outset, and that developing itself after an attack of pseudo-membranous croup. Indeed, this latter is habitually rebellious to every kind of treatment, and, consequently, to the action of balsams; on the contrary, true croup always yields to their action.

This new treatment of croup presents only some slight inconveniences alongside of its incontestable advantages, and should therefore engage the attention of practitioners, especially during epidemics of croup.

C. PAUL ON THE OLEO-RESIN OF CUBEBS.

Cubebs, given under the form of an oleo-resinous extract inclosed in capsules, does not disturb the functions of the stomach, and the best moment for giving it is at the beginning of meals. This preparation causes only a few eructations, permits the digestion even of those patients who have bad stomachs, and never gives rise to diarrhœa.

Cubebism, that is, the production of a specific roseola, happens rarely, and requires at least eight days of treatment with these large doses.

On the other hand, recent gonorrhœas, particularly

those which are remarkable for their intense pain and inflammatory action, in a word the most painful ones, cease almost immediately under this mode of treatment. Pain and purulent discharges disappear in forty-eight hours, or in three days at the most, and the patient has nothing more than a mucous discharge, which readily responds to the treatment, and which a few injections easily finish.

These are the true indications for cubebs, and, it should be added, the remedy ought to be given as early in the disease as possible.

The other forms of gonorrhœa, chronic gonorrhœa, "la goutte militaire" or simply recent, but atonic, catarrhal gonorrhœa, are in nowise modified by this treatment.

It is then to essentially acute gonorrhœa that this remedy is directed, and it has the advantage of being able to be carried to a dose sufficiently high to constitute an abortive treatment: 8 capsules corresponding to nearly 2 ounces (60 grammes) of the crude berries of cubebs. I order 8 capsules a day, as follows: 2 before breakfast, 2 before luncheon, 2 before dinner, and 2 at bedtime; experience having demonstrated that if taken just before eating they cause few or no eructations.

This treatment is only continued for eight or nine days, after which it is nearly inert. Moreover, it seldom happens, that beyond this period, the discharge, thus treated, remains very acute; what remains of the gonorrhœa is then fortunately manageable by slightly astringent injections.

Encouraged by the success which I had obtained

for three years in inclosing in capsules of gelatin the oleo-resinous extract of cubebs, in 1861 I asked my friend Delpech, a pharmacist of Paris, to prepare me a certain number of these capsules, and to ascertain if he could not bring their pharmaceutical preparation to perfection.

M. Delpech added to the solvents, water and alcohol, already employed, a third, ether, according to a process recommended by M. Dausse, and principally applicable to the extraction of aromatic principles from plants, and obtained an extract possessing certain active principles of cubebs, which were wanting in the first preparations.

The extract thus obtained contained the following principles:

1st. A volatile oil of cubebs, extracted by water and ether;

2d. A resinous balsam, soft and sharp to the taste, extracted by alcohol;

3d. Cubebin, partly obtained by alcohol, but completely by alcohol and ether.

This extract is not blackish, as is the oleo-resinous extract, but of a deep olive-green. It has a thick syrupy consistence, and a strong ethereal odor, in which, notwithstanding, is recognized the odor proper of cubebs. Its taste is decided and pungent like mint. This extract corresponds to ten times its weight of the berries, and not to eight, as the oleo-resinous extract.

It is inclosed in ovoid capsules, each weighing 15 grains (1 gramme), of which three-fourths is the extract.

Under this form, it is without odor or taste, and patients take it readily.

M. Delpech manufactures these capsules as follows:

Purified glue (grenétine), selected gum Arabic powdered, sugar, crude honey (de Narbonne), pure water.

Dissolve these substances in proper proportions over a sand-bath, and plunge into the solution ovoids of tinned iron, fixed upon a plate by thin stems, and oiled; withdraw the whole, and give the plate a slight rotary motion. When the capsules are cold, place the plate in a slightly heated oven, and leave it there until the capsules are dry. Remove them by a brisk traction, and cut them at the part which embraced the stem. Thus prepared, the capsules are filled by means of a graduated burette, and then closed by a badger's hair pencil dipped in the hot solution. Finally, to cover the opening thoroughly, the capsules are again dipped into the solution, and dried in the air, or in an oven. (*Bull. Thérap.*)

I am convinced that the administration of the essence of cubebs and copaiba, under the form of *pearls*, will present the double advantage of permitting the bulk of the dose to be materially diminished, and of removing all inconveniences in their use.

LYONS ON THE USE OF THE CAPSICUM ANNUUM IN DELIRIUM TREMENS.

This has been used in the Indies, and afterwards by M. Lyons, in doses of 22 to 25 grains ($1\frac{1}{2}$ grammes) in bolus.

THERAPEUTICS AND MATERIA MEDICA.

ESSENCE OF CAJEPUT IN CHOLERA.

According to the editor of the "Presse Médicale Belge," in the blue stage of cholera, in which everything in the materia medica has, in its turn, been recommended and tried without satisfactory results, we have, says he, had recourse almost constantly to the oil of cajeput, administered in doses of from one-fourth to one drachm (1 to 4 grammes) in a draught. We owe to the use of this remedy the recovery of several hopeless cases, although our late able and regretted friend, Dr. Prosper Delvaux, in his little work on the "Oil of Cajeput, and its Use in Medicine, Brussels, 1861," says that he has used it in a number of cases of cholera with uniform success, but without any result in confirmed cholera.

GUACO ALCOHOL.

Guaco has been extolled by several physicians in cholera, and its alcohol proved useful in the last cholera epidemic.

PILLS OF SPIRITS OF TURPENTINE. (Dannecy.)

Spirits of Turpentine,
White Wax, equal parts.
Melt together at a gentle heat, let it become cold,
and add
White Sugar, a sufficiency.

Divide the mass into pills, each to contain 3 grains (2 décigrammes) of the spirits. (*Jour. de Méd. de Bordeaux.*)

BATHS OF THE VAPOR OF TURPENTINE IN
GONORRHEAL RHEUMATISM.

We are not in the habit of using baths of the vapor of spirits of turpentine, notwithstanding their incontestable utility.

Here is an observation which again bears witness to their efficacy.

"M. C., aged 28 years, of a bilious temperament, having contracted a clap, lay down upon the grass, and went to sleep, in August, 1851. On awaking, he felt cold; that evening he was taken with fever, and the next day felt pain, with heat, redness and swelling of the left knee. He treated himself with compresses moistened with ether and water, poultices containing laudanum, purgatives, &c.; and at the same time combated the gonorrhœa with copaiba, and injections of nitrate of silver. He was able to go about in six weeks, but for a long time the articulation presented a state of stiffness, and a sensation of agglutination of its surfaces, accompanied with crepitation on moving the limb; this condition yielded very slowly to steam baths. In August, 1852, he contracted a fresh clap, attended with pains in the left hip, which were not gotten rid of until the expiration of six weeks, steam baths and friction with opodeldœc being used. In July, 1855, a third gonorrhœa, with intense pain in the left shoulder—cured in two months. Finally, in June, 1856, following a fourth gonorrhœa, there was rheumatism of the left tibio-tarsal articulation, and, in a less degree, of the

right one, and of the left shoulder, in addition to lumbago.

"It was in this condition, at the end of two months, that 'M. C.' came under the care of Dr. Macario, who ordered terebinthinate baths, with a hydropathic after-treatment. The patient took 18 of these baths, always followed by a shower or a plunge bath; the shower was taken during the day in small jets as usual, or dashed upon the body and, particularly, the left foot. In twenty days there was a great amelioration; the lumbago and the pain in the shoulder had disappeared; the swelling of the foot had considerably diminished, and the movements were much more free. The improvement continued to a perfect cure." (*Gaz. Méd. de Lyon*, 1866. No. 16.)

COMMENGE ON THE EMANATIONS FROM GAS-WORKS IN WHOOPING-COUGH.

The treatment of whooping-cough by the respiration of substances which are liberated by the materials used in purifying gas gives the best results. In a majority of cases, the cure is the result of this method of treatment, even in those where reputed remedies have failed. Here is the very encouraging conclusion of the work of M. Commenge.

A cure is produced at all stages of the disorder under the influence of this treatment, and at whatever age of the patient. When even a cure is not effected, a great amelioration of most of the symptoms is observed. The number of inhalations necessary to effect a cure varies with the individual; it has

ranged from three to thirty, the general average within the first four months being twelve, and fourteen beyond this.

The patient should remain in the purifying-room two hours each time.

Cold weather is the least favorable for this treatment, not that the action of the atmosphere impregnated with gas is less pronounced, but because of the cold, which is both painful and dangerous. Of course, this can be remedied by placing the little patients in rooms which can be heated. There is no danger for children, at any age, in submitting them to the inhalation of the volatile substances which are disengaged by materials used in purifying gas.

NITRE PAPER—THE PRODUCTS OF ITS COMBUSTION.

The efficacy of the combustion of nitre paper is too well established to make it necessary to dwell upon it here. But it is not yet known how to explain its happy effects. Volk has recognized among the products of its combustion carbonic acid, carbonic oxide, cyanogen, ammonia, nitrogen, water vapor, and the carbonate and nitrite of potassa. It is to the presence of ammonia and the nitrite of potassa, to which the author attributes the therapeutic properties of this paper.

FULLER'S THISTLE (TEAZEL) IN GANGRENE. (Beuillard.)

I have used for fifteen years the green leaves of the "*Dipsacus Sylvestris*," cut and bruised, to combat

gangrene, which so often attacks gunshot and other wounds. The effects of this remedy surpass by far those of cinchona, camphor, and all other antiseptics, as will be seen from the comparative experiments that I have made to fix definitely its therapeutic value.

The following is the manner in which I apply it :

A. The wound is several days old, and has an irregular, torn, jagged aspect, is black, and has the characteristic repulsive odor of gangrene; the gangrene is extending to a certain depth: with a bistoury, or curved scissors, I cut away as much as possible of the dead tissue, without impinging upon the living.

In this way I avoid causing pain and hemorrhage (the surgeon judging if depletion be necessary); I wash the wound with water chlorinated to the extent of one-tenth, and then fill it with the green leaves of the plant, cut very fine, so that they may come in contact with every part of the wound; this is covered with a compress, and the whole is retained by several turns of a bandage. In this climate I only make one dressing a day, but in warmer latitudes I think it would be necessary to do so both morning and evening. Under the influence of this simple application, in twenty-four or forty-eight hours, sometimes longer (in which event we should not be discouraged, for success is certain), the gangrenous wound is reduced to a healthy one; the black color has disappeared, a kindly suppuration is established, and fleshy granulations commence to grow.

B. Take a contusion, without rupture of the skin, and gangrene appearing in a short time, invading the

skin and subjacent parts. to some depth. In this event, I dissect off the dead tissue, with the same precautions against pain and hemorrhage as in the first instance. The cavity is freely washed with chlorinated water, and dressed with the *Dipsacus* leaves, with the same result as before, that is, the disappearance of the gangrene, and the establishment of a healthy wound, which should have the usual simple dressing, but returning to the use of the thistle if the black color reappears.

The stem of the *Dipsacus* being green only towards the end of spring, or the beginning of summer, it would be well, particularly when large quantities are required, as is the case after battles, to have it under the form of an aqueous extract, which is quite as efficacious as the green leaves. I apply this pure by spreading it upon fenestrated compresses, or in a liquid state by means of picked lint. During other periods of the year, only young stalks of the plant, without stems, are found, displaying their beautiful green leaves on the surface of the soil; these answer just as well, but can only be obtained in small quantities. It is not necessary to await the flowering season, as with other plants that are to be preserved; I have used it at every period of its growth, without observing any difference in its action.

FLOWERS OF SULPHUR IN CROUP. (Lagauldrie.)

In a case of croup, I took a tablespoonful of flowers of sulphur, which I mixed in a glass of water, and recommended a tablespoonful of the mixture to

be given every hour, after shaking. The next day the child was better, and the prescription was renewed. The third day I ceased my visits, the child being cured, having only a loose cough, which I attributed to the false membranes hanging loose in the trachea, and of which I requested the parents to advise me if they were expectorated. Two days afterwards a violent fit of coughing expelled them, and three pieces, already dry, and each as large as a good sized bean, were brought to me.

From this day to the 23d of May, six other cases presented themselves; the oldest child was seven years, and the two youngest were respectively twenty and eleven months old, and I declare that the treatment with large doses of sulphur, systematically used, worked miracles, in saving from a certain and early death these seven children; the treatment in no instance lasted more than two days.

The remedy has the incontestable advantage of being entirely harmless.

SULPHUR IN DIPHTHERITIC AFFECTIONS. (Thevenot.)

For six months I have used sulphur in all diphtheritic affections, such as muguet, diphtheritic sore-throat and disorders resulting from it, and which take their name from either their place or degree of development, or from their aggravated character. This includes malignant, pseudo-membranous, gangrenous and suffocating sore-throat, and membranous croup. And we may add buccal, pharyngeal and tracheal diphtheria; the so-called pultaceous

sore-throat (exaggerated muguet); and Fothergill's sore-throat (of scarlatina).

In all of these affections, sublimed and washed sulphur applied to the part by means of a hair pencil, two or three times a day, most often suffices to make disappear, within twenty-four hours, every vestige of membranous production (I may say cryptogamic). And in cases where it is impossible to apply it to the diseased part, it seems, according to one of our honorable confreres (see the preceding article), that it answers to give it internally. I am able to affirm that never, since I have practised medicine, has any treatment given me such sure and prompt results. *I consider then this remedy as a spécifique.*

SAL AMMONIAC IN SENILE GANGRENE. (Gru.)

Sal Ammoniac, q. s.
for a pediluvium.

The same solution was employed in fomentations. At the same time, M. Gru prescribed the salt internally. (*Bull. Méd. de l'Aisne.*)

EVACUANTS.

LARGE DOSES OF TARTAR EMETIC IN DELIRIUM
TREMENS. (Deprez.)

If we did not possess other means, the following observation would prove the efficacy of tartarized antimony, in large doses, in delirium tremens:

A young man received a fracture of a rib, resulting from a violent contusion of the chest. On the fourth day and during the night, symptoms of delirium tremens began to develop themselves, viz., agitation, incessant loquacity, hallucinations. The syrup of digitalis* was first given in doses of 4 tablespoonfuls in twenty-four hours. On the sixth day these symptoms had become aggravated, so that the patient, who no longer referred to the pain in his side, walked about carrying burdens, a prey always to his hallucinations, which were growing more and more annoying. The digitalis offering no obstacle to the development of these complications, 25 drachms of the syrup of morphia† were given within the space of eight hours, the trembling continuing violent. Recourse was then had to a solution of tartar emetic

* This syrup contains the strength of 2 ozs. of the leaves, exhausted by boiling water, in 2 lbs. of the preparation, and is therefore one-half as strong as the Tr. digitalis.—TRANSLATOR.

† Strength: 1 grain to 4 ounces.—TRANSLATOR.

(4 grains in 3 ounces) in doses of one *tablespoonful* every hour. After having taken three *tablespoonfuls*, the patient became perfectly quiet; a restorative sleep, which was prolonged the next day by a few *tablespoonfuls* of the same solution, put an end to the trembling and hallucinations. The pulse, which had risen from 60 to 100 beats, returned gradually to the normal standard, and two days later the patient again complained of the pain produced by the fractured rib. (*Bulletin Médical de l'Aisne.*)

TARTAR EMETIC POWDER.

M. Roussin has made a communication to the Société de Pharmacie relative to tartar emetic in powder. It is known that this powder, when obtained by pulverizing the crystals of the salt, is generally very dense, and is very slowly soluble, particularly if nothing is used to effect it but the spatula, as is usually the case. M. Roussin has observed that, in preparing the powder, if alcohol be added to the watery solution, it is obtained much lighter, and is more promptly and more easily soluble. He therefore proposes the use of the powder, and recommends that it be dispensed only by means of the balance.

PURGATIVES OF THE BARK OF THE RHAMNUS.
FRANGULA.* (Lippert.)

The old bark of the *R. frangula* is a good, sure and mild purgative, one not yet sufficiently known by French physicians. The bark must be taken from the trunk, and not from the branches of the shrub, and must have been dried for one year, otherwise it produces gripings.

The preparation which I make use of, and which has an agreeable taste, is given in wineglassful doses at bedtime, and is made as follows :

Old bark of the *R. frangula*, . . . 1 ounce.
Water, a sufficiency to make one pint of decoction.
Citrate of Magnesia,
Syrup of Orange-peel and Anise-seed, each 1 ounce.
Mix by decoction.

DIURETICS.

DIGITALIN.—DIGITALIS.

Numerous works are published every year on the therapeutic use of digitalis, and of digitalin. Several observers still continue to prefer digitalis to its active principle, and wrongly so, I believe, because nothing is

* The *R. catharticus* (Buckthorn) is indigenous to, and is used in this country; it may be substituted for the *R. frangula*.—TRANSLATOR.

more uncertain than the quantity of digitalin contained in the leaves of commerce ; and nothing is more important than the rigorous proportioning of an agent which may become dangerous in exaggerated doses, or may remain inert if administered in insufficient quantities. The principal objection to digitalin is that it is not crystallizable, and that bad or surreptitious specimens are found in the shops. As to myself, I have never been deceived. I always use the granules of digitalin, prepared by Komolle and Quevenne, and have invariably found them uniform in strength. I prescribe most often three granules, each containing a little more than $\frac{1}{100}$ of a grain. I never exceed six granules in 24 hours, and only administer the remedy for six days, leaving always an interval of repose of eight days between each period of six days of its administration.

DIGITALIS IN THE TREATMENT OF ARTICULAR RHEUMATISM. (Dertelle.)

Dr. Dertelle has sustained before Dr. Wurtz, Dean of the Faculty, an interesting thesis on the use of digitalis in the treatment of articular rheumatism.

I produce herewith the *résumé* :

To bring into better relief the conclusions which we shall draw from our observations, we first make a succinct *résumé* of them. This mode of procedure will, I believe, be useful, in enabling us to appreciate fully the results obtained. In each observation, we shall take account of the age, the constitution, the family antecedents with respect to rheumatism, the

elevation and depression of pulse. We shall note whether it be the first or second attack; and, finally, we shall speak of the period of nervous troubles, vomitings, recoveries, and of the quantity of digitalis used in each case.

Obs. 1. Age, 39; constitution robust; rheumatic antecedents; first attack in 1857; pulse, max. 92, min. 76; temperature, max. 101.5° , min. 99.7° ; quantity of digitalis taken, 46 grains in infusion; no vomiting; no nervous manifestations; recovery in five days.

Obs. 2. Age, 29; constitution, good; no rheumatic antecedents; no anterior attacks; pulse, max. 92, min. 60; temperature, max. 105.8° , min. 100.2° ; quantity of digitalis taken, 76 grains in infusion; vomiting on the seventh day; dilated pupils; depression; slow replies; insomnia on the eighth day; recovery in fourteen days.

Obs. 3. Age, 16; constitution, ordinary; rheumatic antecedents; no anterior attacks; pulse, max. 100, min. 42; temperature, max. 102° , min. 97.34° ; quantity of digitalis, 76 grains in infusion; vomiting on the fourth day; somnolence on the sixth day; dilated pupils; recovery in ten days.

Obs. 4. Age, 31; good constitution; no rheumatic antecedents; no anterior attacks; pulse, max. 88, min. 48; temperature, max. 102.56° , min. 100.4° ; quantity of digitalis, 46 grains in infusion; vomiting; no disturbance of nerve centres; recovery on the seventh day.

Obs. 5. Age, 32; constitution, good; no rheumatic antecedents; no anterior attacks; pulse, max. 80,

min. 52; temperature, max. 101.5°, min. 100°; quantity of digitalis, 61 grains in infusion; vomiting, fourth day, and persisting several days; cephalalgia sixth day; recovery in twenty-two days.

Obs. 6. Age, 33; constitution, good; no rheumatic antecedents; no anterior attacks; pulse, max. 98, min. 40; temperature, max. 102°, min. 98.66°; quantity of digitalis, 76 grains; vomiting the third day; cephalalgia fourth day; recovery from first attack in nine days, from the relapse in seven days.

Obs. 7. Age, 22; vigorous constitution, no rheumatic antecedents; no anterior attacks; pulse, max. 108; min. 72; temperature, max. 102.9°, min. 100.4°; quantity of digitalis, 46 grains; no vomiting; no disturbance of nerve centres; recovery in eleven days.

Obs. 8. Age, 21; constitution, good; no rheumatic antecedents; pulse, max. 104, min. 32; temperature, max. 104°, min. 93.9°; quantity of digitalis, 69 grains; no vomiting; nerve centres: double vision fourth day, headache and vertigo, sixth day; on the eighth day, unconnected dreams, delirium, loss of memory; recovery in twenty-two days.

Obs. 9. Age, 23; constitution, good; no rheumatic antecedents; one previous attack; pulse, max. 124, min. 110; temperature, max. 106.04°, min. 102.74°; quantity of digitalis, 31 grains; vomiting, delirium, headache, second day; death.

Obs. 10. Age, 39; robust constitution; no rheumatic antecedents; no previous attack; pulse, max. 80, min. 50; temperature, max. 102.12°, min. 99.9°; quantity of digitalis, 46 grains; vomiting, sixth day; no disturbance of nerve centres; recovery in ten days.

Obs. 11. Age, 24; strong constitution; no rheumatic antecedents; no previous attack; pulse, max. 104, min. 52; temperature, max. 102.2° , min. 100.04° ; quantity of digitalis, 76 grains; vomiting, fifth day; no disturbance of nerve centres; recovery in nine days.

Obs. 12. Age, 58; good constitution; no rheumatic antecedents; no previous attack; pulse, max. 98, min. 50; temperature, max. 103.28° , min. 99.68° ; quantity of digitalis, 108 grains; nausea, vomiting; no disturbance of nerve centres; recovery in fourteen days.

Obs. 13. Age, 34; robust constitution; no rheumatic antecedents; no previous attack; pulse, max. 90, min. 64; temperature, max. 103.64° , min. 100.4° ; quantity of digitalis, 61 grains; vomiting, fourth day; no disturbance of nerve centres; recovery in five days.

CONCLUSIONS.

It is the province of scientific works to include in a few short precepts the results of long researches; and although this thesis, as modest as it may seem, has cost us some effort, it does not escape the common law. Therefore we give the exact results of our observations.

The ages did not furnish us with any particular indication, since, in all the cases, we had to deal with adults. Likewise all the constitutions were good.

In two persons we find rheumatic antecedents in the family (Obs. 1 and 3), nevertheless recovery took place in 5 and 10 days respectively.

The effect of the digitalis was to diminish the number of pulsations (from 104 to 32 (Obs. 8), the minimum noted); to depress the temperature (min. noted 93.9°, Obs. 8); and so completely, that from the moment in which these changes were made, the disease entered upon resolution.

Under the action of digitalis the number of pulsations diminishes more quickly than does the temperature. It requires 24 to 48 hours to bring the pulse down, whereas it requires from 36 to 60 to reduce the temperature; and moreover, when commenced, its fall is less rapid than that of the pulse.

Vomiting was observed eight times in 13 cases, and appeared on an average from the fourth to the fifth day.

With respect to the phenomena evinced by the nerve centres, we only met with them six times in the thirteen cases, and they consisted in cephalalgia, depression, slowness in replying, insomnia, dilated pupils (Obs. 2 and 3), somnolence (Obs. 3), double vision, vertigo, unconnected dreams, delirium, loss of memory (Obs. 8).

Recovery was effected, on an average, by the use from 46 to 61 grains (3 to 4 grammes) of digitalis in infusion; and in several cases it took place very rapidly: five days in the first case, and generally in from 9 to 12 days.

Here we are at the end of our work. What will remain of these researches? That digitalis will be in the hands of practitioners as powerful a weapon against rheumatism as bloodletting or sulphate of quinine, we cannot say; be it as it may, let it disap-

pear or be established more and more as a mode of treatment, we shall none the less have a firm conviction of having performed a useful work, in calling attention to a new medication, one which seems to us destined to render good service.

DIGITALIS IN PNEUMONIA. (Gallard.)

In the case reported by M. Gallard, in the "Bulletin Thérapeutique," for March, 1866, digitalis was not employed alone, and it could be objected that the amelioration was due less to it than to the other remedies which were prescribed with it. But it should not be forgotten that the anterior treatment, consisting in a blister and the administration of nearly 4 grains (25 centigrammes) of tartar-emetic, had been of no benefit up to the moment when we were called upon to suspend it; and this was precisely because, in the state of feebleness and depression in which the patient was, he did not seem able to bear it any longer.

On the first day we had excluded bloodletting as entirely contraindicated; and the tartar-emetic failing, was it necessary to have recourse to stimulants, alcohol particularly?

I did not think so, because, the patient seeming to be in a state intermediate between adynamia and ataxia, I saw as many objections in sur-exciting as in depressing him. It was this which induced me to try digitalis, having used it so far only with great reserve. I prescribed six powders, each containing about three-fourths of a grain of digitalis, every two hours, with the recommendation to my "interne"

(assistant) to suspend them at his evening visit if there was a marked sedation of febrile action. He did this, and we ascertained that four of these powders had sufficed to bring the pulse down 20 beats in 24 hours, followed on the next day by a still further depression; at first it had been 108 to the minute, after the first 24 hours, 90, and the next day, 60: being a fall of 48 beats in 48 hours. I held up here, through fear of carrying it too far; but it was evident that the digitalis had been of the greatest assistance to me in this particular case, for without it I should not have been able to obtain so favorable and, particularly, so rapid a result. The local symptoms did not delay to follow the improvement in the general symptoms; and the patient, whom we did not think capable of supporting an energetic, perturbing treatment, found himself cured in less than one week of a pneumonia which had commenced in a most alarming manner.

DIURETIC WINE OF THE "HÔTEL DIEU." (Trousseau.)

R.. White Wine (10 per cent. of Alcohol),	125 ounces.
Alcohol of 90 degrees,	125 drachms.
Digitalis Leaves, dried,	15 "
Spiced Squills,	7½ "
Juniper Berries,	75 "
Dry Acetate of Potassa,	50 "

Subdivide the digitalis leaves, the juniper, and the squills; macerate them for fifteen days in the wine and alcohol, in a close vessel, which should be shaken from time to time; throw the whole upon a cloth, and express. To the liquid thus obtained, add the acetate

of potassa, shake until this is dissolved, and filter through paper. (*Trousseau's Formula regulated by Professor Regnauld.*)

This excellent preparation is given in dropsies, in from 1 to 3 tablespoonfuls a day.

SQUILLS IN AFFECTIONS OF THE SPLEEN.

Dr. Hennigke calls attention to the action of squills in splenic affections. The case which he reports is that of a man who, fifteen months previously, had a pleurisy on the left side, which had determined a displacement of the heart to the right; and, moreover, there was an increasing enlargement of the spleen. In the left hypochondrium there existed a hard elastic tumor, the anterior border of which extended to the epigastric region. It attained a point three inches in front of the anterior edge of the ribs, and reached to a line parallel to the axis of the tenth rib, towards the vertebral column. This tumor was little movable, and could, in places, be seized through the abdominal walls. What is more important is that no cause could be found for this tumefaction; the patient had never had intermittent fever, and the existence of the tumor dated from a period that could not be fixed. Fifteen drops of the tincture of squills were prescribed, five times a day. The spleen decreased in size every day, and the urine increased in quantity. At the end of three weeks the patient was cured. (*Gaz. Méd. de Strasbourg.*)

BENAVENTE ON THE USE OF THE NETTLE* IN
PASSIVE HEMORRHAGE.

The author has used a decoction of 1 ounce of the common nettle in 2 pints of water, in doses of a cupful several times a day, to control hemorrhages. This decoction succeeded in two cases of passive menorrhagia, and in four of symptomatic metrorrhagia, in which ergot, tannin and opium had failed. Dr. Gallego has likewise used it in civil practice at Almaden, as have several other Spanish physicians, and all with success.

The exciting properties of the nettle being acknowledged, it is easy to foresee its action, and to determine its use. All passive hemorrhages yield to it, and it is through its exciting influence upon the entire organism that it succeeds equally well as a febrifuge. Other stimulants may succeed in this respect, but by its intense action it offers some peculiar advantages which experimental and comparative researches with the decoction or extract of this common plant are necessary to elucidate.† (*Siglo Medico, and Union Médicale.*)

* *Urtica urens*.—TRANSLATOR.

† The common nettle has been used in this country in uterine hemorrhages. Dr. U. B. Johnson, of Alabama, reported its use, some years ago, to the New Orleans Med. and Surg. Journal, vol. vi, p. 452.—TRANSLATOR.

CHLORATE OF POTASSA IN PHAGEDENA. (E. Tillot.)

The chlorate of potassa may be employed externally, in solution or in ointment: in solution, of $2\frac{1}{2}$ to 3 drachms to 18 ounces; in ointment, Mr. Puche has used $\frac{1}{2}$ drachm in 1 ounce of lard. M. Martinet, says M. Bouchardat, uses it in glycerine in the following proportions: glycerine, 10 drachms; chlorate of potassa, 1 drachm.

The mode of application varies according to the situation and nature of the disease; by injection, as a lotion, or by friction, once or twice a day. If chlorate of potassa has been used upon ulcers, it has not, to our knowledge, been much so in phagedena.

Here its action is not rapid, but constant; once commenced, it continues, even after having been momentarily suspended.

CHLORATE OF POTASSA TO PREVENT ABORTION.

According to Bruce, several women used this salt, having previously had several miscarriages, or still-born children, and gave birth to living ones: a miracle to be attributed, by all means, to this "sel à la mode!"

May it not be said that it has become to be used as a panacea? Be it as it may, Drs. Inglis, Cairns, Moir and Keiller present facts corroborative of this interpretation. (*Union Méd.*)

PREPARATION OF THE CHLORATE OF SODA. (Jager.)

This preparation is made after Winckler's process, slightly modified. The author takes equal parts of

tartaric acid, caustic soda, and chlorate of potash, dissolves them in boiling distilled water, lets the bitartrate, which forms, settle, and evaporates to dryness in a vacuum. In eight days magnificent tetrahedral crystals, irregularly modified, are deposited.

BORATE OF AMMONIA FOR STONE. (Becker.)

According to the author, the "ludus" of Paracelsus, so well described by Van Helmont, and of which the reputation for stone was so great, is only the borate of ammonia, which has been used since 1844 in all cases of stone and renal colic. He assures us he has obtained almost constantly a complete amelioration of the disease. Under the influence of the remedy the urine is charged with uric acid and earthy phosphates. The salt is also useful in chronic catarrh of the bladder. Here are the formulæ proposed by Dr. Becker:

- 1st. Borate of Ammonia,
 Liquorice, each, . . 2 drachms.
 Distilled Water, . . . 4 ounces.
 A dessert-spoonful every hour.
- 2d. Borate of Ammonia, . . . 2 drachms.
 Distilled Water, . . . 4 ounces.
 Simple Syrup, . . . ½ ounce.
 A tablespoonful every two hours.

Dr. Becker thinks likewise that allantoin, in inducing a greater degree of oxidation, converting thus uric acid into urea, is, therefore, a means of preventing the formation of stone. It is thus that he explains how Van Helmont has succeeded in this

disease, by prescribing the urine voided in the allantoïd vesicle of the kid or calf.

It is known that uric acid in becoming oxidized produces allantoin, and that this body in turn oxidizing forms urea.

We shall return to these questions in the "memoire" at the end of this volume. (*Journ. Thérap. Méd. Chir.*, Sept. 1, 1866.)

CORROBORANTS.—DIGESTIVE FERMENTS.—TONICS.

In the "Annuaire" for 1866 are given important details upon the preparation of pepsin and its use. We now publish, in addition, the conclusions adopted by the "Commission of the Pantheon" upon this digestive ferment.

PEPSIN.

1st. Pepsin is a body which has the property of coagulating milk, of dissolving fibrin and other albuminoid substances; 2d. The dose necessary to coagulate milk is inversely proportioned to its purity: three-eighths of a grain (25 milligrammes) of pure pepsin suffice to effect this result in 3 ounces (100 grammes) of milk heated to 104° Fahr.; 3d. There are sold under the names of pure pepsin, and neutral pepsin, substances which are neither the one nor the other; 4th. The association with it of starch

(fécule) does not seem to exercise any preservative influence upon it; and it is desirable that druggists should sell this substance pure, and without admixture; 5th. Pepsin may be preserved pure, according to M. Kofmann, in gelatin capsules, and, according to M. Dumerc, by associating with it an equal part of vegetable charcoal. (*Journ. de Chimie Médicale.*)

PEPSIN IN THE DISEASES OF INFANCY. (Stephenson.)

The author is in the habit, each time he is called to a child of delicate constitution, particularly when he observes in them a tendency to diarrhoea, and to vomiting, of recommending the regular use of pepsin; a practice upon which he has only had reason to congratulate himself. He does it likewise, and with equal success, in children who are submitted to the defective, yet sometimes inevitable, system of artificial nourishment, so called, and who, in the majority of cases, make use of cow's milk on account of cheapness and the facility with which it can be procured. M. Stephenson thinks that pepsin can, and ought to, facilitate the digestion of this milk by children, basing his ideas upon the fact of pepsin being obtained from the stomach of the calf whose natural food the milk is.

The author confounds rennet with pepsin; the latter is generally obtained from the stomach of the sheep. The results announced seem to me to bear marks of enthusiasm; nevertheless, I see no objection to trying rennet in cases where cow's milk is with difficulty digested by children, or in adults

where a prescribed milk diet is badly borne. (*Bull. Thérap.*)

SYRUP OF PEPSIN AND BITTER ORANGE-PEEL OF BESON.

Take the product of fifty calves' stomachs, taking care to arrest the evaporation when there remains only $4\frac{1}{2}$ lbs. (2 kilo. 300 grammes) of liquid; add to this after straining:

Lactic Acid,	165 grains.
Tincture of Orange-peel,	$12\frac{1}{2}$ ounces.
Alcoholico-aqueous extract of Curaçao,	$3\frac{1}{2}$ ounces.

Filter through paper, and then dissolve in it, while cold, white lump sugar, 9 lbs.; pass it through linen, and bottle it.

This preparation contains $2\frac{1}{2}$ grains of acidified pepsin in $7\frac{1}{2}$ drachms of syrup (15 centig. to 30 grammes), that is, as much pepsin as three doses, of 15 grains each, of the amylaceous pepsin of Boudault and Corvisart contain. Finally, says the author, it has the advantage over the powder of preserving for several months, and even years, its fermentescible properties. (*Journ. de Chimie Médicale.*)

THERAPEUTIC USE OF THE WARM BLOOD OF THE CHICKEN, TURKEY, AND DUCK.

The blood of the chicken, turkey and duck has been used by M. Marcarel with success in grave cases of anæmia. The blood is received in a cup, heated on a sand-bath, and given internally; the

patient may take a tablespoonful of kirschwasser or rum, afterwards. (*Bull. Thérap., July.*)

I have often employed calf's blood for the anæmia of glucosuria, giving it at the moment it leaves the vessel; the blood of the chicken, likewise warm, may be cooked with broth, after coagulation, and seasoned with salt and spices.

RAW MEAT AND ALCOHOL IN CONSUMPTION.

(Fuster.)

1st. Raw mutton, or beef, and alcoholic drinks in suitable doses, have the effect of arresting phthisis pulmonalis and other consumptive diseases. This is manifested by a return of strength; by a reanimation of countenance; by a return of appetite; and by increased weight. With respect to the increase of flesh, weighing the patient is a certain index; and it is thus that we have been able to recognize that the patient had gained, under this treatment, in one month, and sometimes in three weeks, an increase of 4½, 6½, 9 or 14 lbs. (2, 3, 4 or 6 kilogrammes).

2d. With this general improvement in the economy, aided, as we have already pointed out, by treating prominent symptoms, we observe the disappearance of hectic fever, diarrhœa and colliquative sweats.

3d. The local lesions of the respiratory apparatus, or of other organs, improve with the disappearance of these symptoms, and progress towards cicatrization, as may be ascertained by physical examinations of parts accessible to exploration.

4th. The efficacy of this treatment is not uniform for every stage of these disorders. In the third stage, the amelioration only prolongs the life of the patient, in postponing from day to day the inevitable end.

5th. This treatment succeeds decidedly in the second stage only when the hygienic precautions, recommended in my report of July last, are carried out to the letter.

6th. Phthisis pulmonalis must occupy the first place among consumptive diseases to which this treatment is applicable; but it offers equal advantages in advanced anæmia following large loss of blood or of seminal fluid; also after acute diseases, principally typhus and typhoid fever; in the last stages of leucocythemia, albuminuria, and diabetes. It succeeds also very well in purulent infections, in malarial cachexias, in chronic nervous fevers, and, in a general way, in all prolonged diseases, where it is easy to recognize that the disintegration of tissue is more rapid than its repair.

BALLS OF RAW MEAT. (Dannecy.)

The following is the process of M. Dannecy, given in the "*Revue Thérap. Méd.-Chir.*, No. 24, 1865."

Take: Muscle of beef, any quantity wished; cut it in pieces weighing from 60 to 80 grains, pound them in a mortar, and pass through a hair sieve.

The pulp thus obtained is extremely fine, and is divested of all tendinous and aponeurotic parts.

Add about one-half of one per cent. of pounded

salt, and divide the mass into balls weighing from 15 to 30 grains, and roll them in sifted bread-crumbs. The crumb may be previously seasoned with a little parsley, tarragon, or other sweet herb, chopped very fine.

Thus prepared, these raw meat balls have an agreeable aspect; the repugnant red color of flesh, modified by the white bread-crumbs, reminding one of the rosy hue of raspberries.

THE THERAPEUTIC USE OF MILK.

I shall devote one hour of my course on Hygiene to describing the therapeutic use of milk; it is a subject that Ribes has touched upon in his "Hygienic Therapeutics," and likewise M. Fousagrives in his Hygienic Alimentation. One of my students selected it for a thesis, which he has lately sustained, and now M. Pécholier has just published a paper upon this important subject. I shall content myself here with reproducing the conclusions of this work, reserving the publication of my lecture for the present; but it cannot be detached from the physiological investigation of this liquid food.

We are able to say, in a general way, what are the effects of a milk diet; what pathological conditions call for it; and what precautions will enable it to be tolerated, and make it profitable.

To resolve the problem completely, account must be had of several data, these are: 1st, the quality of the milk; 2d, the nature of the disease; 3d, the individual predispositions; 4th, the manner of controlling the diet.

A. *Quality of the Milk.*—Different specimens of milk, from woman's to those of the domestic animals employed by us, present points of great dissimilarity, upon which chemical analysis furnishes most valuable information, showing in the different kinds of milk in use a notable difference in the relative proportions of casein, butter, sugar and serum present. Furthermore, experiments upon man in a physiological state fully confirm these differences; for it is found that the same individual will digest one kind of milk, and not another.

We have, therefore, an extensive study before us, one already commenced but not yet brought to an end, to determine what kind of milk is specially adapted to the different diseases in which it is indicated.

Cow's milk, which differs widely from woman's, is probably not the medicinal milk "par excellence."

This place would belong more properly, perhaps, to the milk of the ass, if it were not for the difficulty of procuring it, and the repugnance which many persons evince for it. At present some of us believe that we have accomplished a great deal in giving to a patient one or two cups of asses' milk, but how widely this differs from making it his only food and drink!

In our work we have not assumed this standpoint. We have almost always experimented with cow's milk, because the fact of the matter is, it is so easily procurable, and is drunk by the majority of people with more pleasure than any other kind.

Moreover, when the precaution is taken to add a third of its weight of water to cow's milk, it is ordi-

narly more easily digested by the human stomach. An indispensable point in the mode of treatment with which we are concerned, is the selection of the milk; for it is susceptible of extreme variations, according to the time at which the cow calved, the manner in which she is stabled, fed, &c.

Primarily, the physician ought to recommend to his patient to procure, as far as possible, milk from the same cow, and from a healthy and well-kept one. The milk should neither be too "young," nor too "old," and the animal should be under favorable conditions of stabling and feeding. Too often the milk consumed in our large cities comes from cows which never see the outside of their stinking and crowded stables, and a specially provided food increases the quantity of their milk at the expense of its quality. The milk of these animals, which often die phthisical, is of a very inferior quality, and often explains the want of success with the "white diet."

How preferable therefore is the milk of cows fed upon rich, open pastures—that from Normandy or Cévennes! There is a great advantage in the patient's going to the country where reliable milk can be obtained.

-B. *Nature of the disease.*—The milk diet thoroughly carried out with pure, fresh cow's milk, such as we have prescribed, and of which we have reported the results, acts in a twofold manner:

1st. *Through the milk.*—A mild, temperate, and sedative aliment, which is ordinarily digested and absorbed so easily; which contains every substance necessary to the economy; and which, by its prolonged

sedative and unvarying action, becomes a powerful modifying agent, not only upon the digestive track, but upon the nervous system, and even the blood.

2d. *Through the mode of living.*—In most patients subjected to an absolute milk diet, epicurism, that great enemy of our stomach and our health, which induces us to overindulge in the pleasures of the table, finds a limited field for its operations. Furthermore, we have always recommended to our patients, particularly at the outset of the treatment, to take but moderate quantities of milk; and thus the actual amount ingested is materially less than is usual. This gives rise to a predominance of absorption over exhalation, and causes a return into the bloodvessels and excretory passages of molecular matter which has been deposited in any organ, or which, by its accumulation elsewhere, constitutes morbid growths. Such are its powerful alterative effects. The milk diet is also peculiarly well adapted to diseases which arise from faulty nutrition coexisting with a sthenic condition of the general functions of the organism, or with a hardy mode of life.

But to arrive at a full appreciation of the results of a milk diet, we must not stop at these generalities, but let us enter into an examination of the principal diseases in which it is used, and ascertain its special action in each individual case, its indications and its contraindications. This is the course that we have marked out in our clinical work, in which we are principally occupied on diseases of the heart, dropsies and diarrhoea.

1st. In active hypertrophy of the heart, there ex-

ists a great tension in the bloodvessels, a marked injection of the capillaries, a kind of plethora, a constant threat of congestion and hemorrhage of different organs. In such cases we prefer greatly the milk diet to the repeated venesections of Valsalva and Laennec; and to it may be added or not the sedative action of digitalis, thus inducing a diminution in the quantity and plasticity of the blood, and, by reducing arterial tension, lessening the danger of congestion and hemorrhage. The patient experiences a relief and comfort far surpassing his most sanguine expectations. If he perseveres in this long enough (which unfortunately is very rarely the case), and if the lesion is not too great, by degrees an absorption of the superabundant muscular tissue of the heart is observed, and consequently a cure is effected.

We have no facts which demonstrate the direct action of the milk diet in other diseases of the heart. When in them we have observed a remarkable amelioration, it has rather had reference to the dropsy which was the effect of the organic lesion, and which, in its turn, gave rise to new complications.

2d. Dropsy, whatever its nature, seat or cause, often finds an energetic remedy in the milk diet. Generally powerless to remove the cause, the milk attacks directly the dropsy. Thus we have pointed out as cured or improved, cases of ascites depending upon lesions of organs situated in the hypochondria, and cases of anasarca due to disease of the heart, or to Bright's disease.

How does the milk act in these cases? We do not deny that it exerts by its neutral salts, or in some

other way, diuretic effects which are capable of contributing to the absorption of the effusion; but we do think that this is neither its entire nor yet its principal effect, but that it accomplishes a complete change in the exhaling process. This, frequently morbidly changed in dropsies, is, by our therapeutic measures, happily modified; and what confirms this assertion is, that, under the milk treatment, not only is an existing dropsy removed, but its return is more or less delayed, and sometimes indefinitely so. -

We have explained, in the course of our paper upon the subject, the mode of action of the "white diet" upon morbid exhalation, and it will not be necessary to repeat here the theoretical explanation there suggested.

3d. Diarrhœa, and particularly diarrhœa tending to chronicity, often finds the milk diet a powerful remedy. It was first in diarrhœa following enterocolitis, and due to premature weaning, or to dentition, that we made use of it, and recommended it. That form of enterocolitis called by certain authors cholera infantum, and which is attended with so much danger, yields to this treatment, provided the precautions pointed out in our paper are observed. Moreover, the circumstances which indicate the use of a milk diet in the diarrhœa of children, throw light upon those which call for its use in the same disease in adults. It is in those diarrhœas connected with a gastro-enteric irritation, that milk succeeds, whilst it is powerless, and even dangerous, in bilious (saburrales) and atonic diarrhœa.

The milk in these cases has the double advantage

of being a mild and soothing application to the irritated mucous surfaces, and of furnishing a sufficient and easily assimilable alimentation, one which does not fatigue the digestive tube.

4th. The milk diet is useful in several other diseases. Thus, we have instanced a case of dysentery, and one of contracted pylorus, in which remarkable effects were produced. In a word, this treatment, in our estimation, is the most powerful alterative, preferable, undoubtedly, to a dry diet, a vegetable diet, or to the "grape cure." And it is on account of its alterative action that it may be employed in phthisis, cancer, gout, obesity, epilepsy, mania, &c. But, with regard to these, we must be satisfied to point out the experience of others, without reporting facts, confirmatory or contradictory.

c. *Individual predisposition.*—Generally speaking, we have said, the milk diet is adapted to a sthenic rather than to an asthenic, condition of the organism; but numerous exceptions exist, depending upon temperament and idiosyncrasy. There are some who have an almost insurmountable aversion to this diet, and others still who take to it with pleasure, but are unable to digest it. These are therefore occasionally formal contraindications; still, this distaste or repugnance does not always present objections that may not be overcome. Some who detest the milk, and others who do not digest it, learn to do both when it is the only food offered, if given at first in small doses. Hunger, as has been said, is a terrible counsellor, and is also a powerful aid to digestion!

D. *Manner of controlling the milk diet.*—This, as has been shown in the course of these remarks, is the fundamental point of success or failure. If most physicians fail to obtain all the success of which the milk diet is capable, and if, consequently, this therapeutic means is not more universally employed, it is because the diet has not been made sufficiently rigid, and because patients are not impressed with the necessity of combating the first annoyances and distaste, which are but the forerunners of most desirable results.

In our opinion, an indispensable condition of success is to suspend, at the very outset, every other kind of food and drink; we must, to use Sydenham's words, depart from this rule not even to the extent of the breadth of a finger-nail. We must also commence by giving the patient *relatively small quantities of milk, gradually increasing the dose.*

The following, with rare exceptions, is the manner, in which we institute the treatment: Take every two hours a cup of milk diluted to the extent of one-third with water. Increase gradually, on the following day, the quantity of milk if it has been well borne, reaching thus two or three quarts a day, and even more if required. After the good effects of the milk are to a certain extent obtained, a little bread may be allowed with it. The proportion of bread is slowly increased; and, finally, light meats (for example, oysters) may be added, and subsequently more substantial ones. Thus the patient may return to his usual diet. The milk diet ordinarily induces con-

stipation, an accident to be remedied by mild laxatives or enemata.

Milk, tepid or cold, is generally more easily digested than boiled milk; nevertheless the contrary is met with in certain cases.

The digestion of milk is favored in several ways. Most often, we have observed, lime-water renders it more grateful to the stomach; which service may be fulfilled by bicarbonate of soda, magnesia, and all the alkalies. In other cases, instead of alkalies, acids must be used. In still other cases recourse must be had to bitters, and even to a few drops of good rum. These are shades of difference which experience alone can decide.

Finally, to repeat, the most difficult point to obtain is perseverance on the part of the patient (who may have in him one of the most common and deep-rooted passions of the human heart, gourmandism) in an unvarying, and perhaps, tiresome regimen. In inspiring the patient with a great confidence in the prescribed remedy, the physician will obtain a determination which will not yield to several days of weariness and lack of improvement. But to convince others, one must himself be convinced! And that physician will not lack confidence, who, in suitable cases, gives the milk diet a wise and prudent trial. Experience speaks so clearly here, that only those remain incredulous who do not wish to be convinced! (*Extract from the Montpellier Médicale, April, July, and September, 1866.*)

LIEBIG'S ARTIFICIAL WOMAN'S MILK.

Wheat Flour,	5 drachms.
Malt Flour,	5 "
Water,	10 "
Skimmed Milk,	50 "
Solution of Carbonate, or of Bicarbonate of Potassa,	1 "

The solution of carbonate of potassa contains one part of the carbonate in eight parts of water; and the solution of bicarbonate contains two parts in eleven.

PHOSPHATE OF GRAIN.

The English give this name to a very simple and much used preparation which serves to complete the alimentation of sick and delicate infants, &c.

Make a decoction of bran; strain it, add sugar, evaporate to dryness, and pulverize. The dose is 3 or 4 teaspoonfuls daily.

INJECTIONS OF STARCH IN URETHRITIS. (Luc.)

Rub the starch in a mortar to an impalpable powder, mix with it a quantity of water, at about 68° Fahrenheit, sufficient to make as thick a broth as possible without interfering with its passage through the nozzle of the syringe.

In acute urethritis, of whatever stage, I commence by subjecting the patient to sitz-baths, until the pain in the canal is relieved; at the same time I order 4 drachms (nearly) of the confection of opium (15 grammes de l'opiat) to be taken during the day, and

flaxseed tea as a drink. I next order, on an average, four of the starch injections a day, or more if necessary; in indolent urethritis I commence with these immediately.

To use them, the piston is removed and the syringe filled; replace the piston, invert the syringe, and drive out what air has been entrapped; shake the contents, and inject quickly, acting as with the bismuth injections.

(See article "Subnitrate of Bismuth in Blennorrhagia, &c."—TRANSLATOR.)

COD-LIVER OIL; ITS MANUFACTURE IN NORWAY. (L. Soubeiran.)

In the greater number of manufactories, the livers are heated in vessels having double bottoms, into which steam is passed, and in which the filtration is effected likewise under the influence of heat.

We have seen at Bergen an apparatus made by one of our compatriots, M. Bouilly, which appeared to be the most simple and convenient of all. This apparatus, of cast-iron, had originally a separate furnace which heated four small receptacles; now the boiler is of sheet-iron, and furnishes steam to four large receptacles with double bottoms.

The livers should be fresh; they are thrown into a double-bottom boiler, of three or four barrels capacity, which is heated by steam. As fast as the oil separates it is caught and cooled in large basins called "kilers." While cooling it clarifies, loses its turbid appearance, and forms an abundant deposit;

it is then decanted, and preserved in vessels of tin, they being preferable to the wooden casks, which are apt to darken the very white oil obtained at the commencement of the operation.

When the livers in the boiler cease to yield a white oil, they are withdrawn and put into a cast-iron boiler, of a capacity of three or four barrels, and heated to dryness over a brick furnace, which is surrounded by a circular space to maintain the heat. The livers are stirred up while heating, and a light-brown oil is thus obtained, which the Norwegians use largely for illuminating purposes.

After all of this light-brown oil has been withdrawn at a low heat, the temperature is raised, and the boiling is maintained for about ten hours, to obtain the brown oil of commerce. (*Société de Pharm.*)

COD-LIVER OIL;—A MEANS OF REPLACING IT.
(Rouland.)

Cod-liver Oil,	. . . . .	88 drachms.
Alcohol (40 deg.),	. . . . .	20 "
Essence of Peppermint,	. . . . .	1 "

We obtain by this an emulsion, of which the dose is a tablespoonful three times a day.

The above formula has given Dr. Rouland satisfactory results; however, he has met with cases of phthisis in which the stomach rejected the oil even thus subdivided. In these cases, as in those in which the use of cod-liver oil has been too prolonged, he

has advantageously replaced it by an oleo-phosphatic mixture, in the following proportions :

Oil of Sweet Almonds,	. . .	20 drachms.
Butter of Cacao, . . .	. . .	1 “
Alcohol (40 deg.), . . .	. . .	10 “
Syrup of Fir Tops,* . . .	. . .	18 “
Tincture of Orange-peel, . . .	. . .	1 “
Phosphate of Lime, . . .	. . .	1 “
Mix and dissolve.		

(*Abeille Méd.*)

FERRUGINOUS PREPARATIONS.

The new Codex has introduced a modification in the preparation of Quevenne's iron. To obtain the peroxide for reduction, the perchloride of iron has been substituted for the persulphate. In this manner the formation of a sulphide of iron, which formerly was sometimes found mixed with the reduced iron, is prevented. Long previously Quevenne had recognized and avoided this accident by the remarkable care he took in preparing it. M. Debreuil has scrupulously adopted his processes and his apparatus ; so Quevenne's iron will maintain the supremacy it has held for several years—a supremacy due to its excellent preparation, its complete innocuousness, and its certain effects.

* This, not being officinal, may conveniently be replaced by the Syrup of Wild Cherry, or of Tolu.—TRANSLATOR.

ACTION OF PREPARATIONS OF IRON UPON TEETH.

(Smith.)

Dr. Smith has instituted several experiments, with the object of ascertaining how much truth there is in the common opinion which attributes to preparations of iron a direct deleterious action upon the teeth. The author placed some teeth in solutions of different salts of iron, and allowed them to remain several days. In some of them he observed that the teeth had assumed a dark, blackish tint, which could easily be made to disappear, whilst in others they had undergone a profound alteration; the bony substance was softened, the enamel destroyed, and crumbled like chalk at the least touch. The result of these experiments proved that if certain ferruginous preparations exercise little or no deleterious effect upon the teeth, others, on the contrary, injure them seriously. Among the latter are the muriated tincture of iron, next the persulphate of iron, and, in a less degree, the wine of iron. (*Edinburgh Med. and Surg. Journal*, and *Giornale Veneto di Scienze Mediche*.)

PERCHLORIDE OF IRON IN CHOLERAIC DIARRHŒA.

(Delezenne.)

M. Delezenne, "Interne" of M. Boys de Loury at St. Lazare, has tried the perchloride of iron in liquid form in choleraic diarrhœa, in cholérine, and even in cholera itself, and in nineteen cases obtained satis-

factory results. The remedy was administered in doses of 30 drops, prepared as follows :

Solution of the Perchloride of Iron,	. 30 drops.
Distilled Water,	. . . . . 5 ounces.
Simple Syrup,	. . . . . 1½ "

When the first dose did not give sufficiently rapid results it was renewed the same day. The remedy presented no inconveniences. According to M. Delezenne, reliance may be placed upon the remedy as an anti-diarrhœtic in cholera ; and, moreover, it is a good disinfectant.

The researches will be prosecuted, and the results published. (*Gaz. des Hôpitaux.*)

GARGLE OF PERCHLORIDE OF IRON.*

Solution of Perchloride of Iron (29.70 per	
ct. of the dried salt = 30 Beaumé),	. 1 drachm.
Water,	. . . . . 1 ounce.
Mix.	

PERCHLORIDE OF IRON.—DEATH CAUSED BY ITS INJECTION INTO A SUBCUTANEOUS NÆVUS. (Carter.)

An infant, a girl, one month old, presented on the lower half of the nose an aneurismal mass (nævus) involving the septum and the two ala, and increasing

* It must be borne in mind that the solution of this salt of iron, mentioned in the two preceding articles, is about four times the strength of the Tincture of the Chloride of the U. S. P.—TRANSLATOR.

the size of the organ threefold. Cauterization with hot needles, and vaccination upon the part, having been used without success, an injection into it of the perchloride of iron was made. Five drops of the solution penetrated quickly to the centre of the tumor; the infant uttered a cry, had a short convulsion and died.

Mr. Nathaniel Crips reported to Mr. Carter a similar case which happened in one of the colonial hospitals. The autopsy demonstrated that the point of the syringe had penetrated the transverse facial vein, and that the blood was coagulated in the right side of the heart by an embolus which had been carried thither.

These misfortunes should tend to impress upon surgeons who practise these kinds of injections the necessity of interrupting completely the circulation in the vessels to be injected, and where this cannot be done, to abstain from the operation altogether.

THE CULTIVATION OF CINCHONAS IN JAVA AND THE INDIES. (Decaisne.)

The governments of Holland and England have not awaited the last moment to insure to the inhabitants of those countries, and, perhaps, to mankind in general, a supply of cinchona, after its present source in America is exhausted. They have thought that they could, and should, do with the cinchona tree, what France, in the last century, did with the coffee plant, in introducing it to the New World; and what England has recently done with the tea, by natural-

izing and cultivating it upon the slopes of the Himalayan chain.

The duty which was first undertaken was in no wise an easy one: the difficulty arising in the cinchona country in the opposition which the authorities interposed in order to preserve a monopoly of this commodity, by severely prohibiting the exportation of the seed and young plants. The Dutch and English collectors who were sent thither met with such strenuous resistance that they were obliged to resort to stratagem, both in procuring and in exporting the seed. They succeeded, however, and their collections arrived in India.

It was pretty well known under what conditions of soil and climate the cinchona tree grew in its native Andes, but there could be no assurance of finding absolutely identical conditions under other skies, and in different latitudes. Still, as vegetation in general has a temperament sufficiently flexible to adapt itself to conditions of climate differing only slightly from that of its indigenous soil, it was thought, that in approximating as nearly as possible to it, the chances of growing the cinchona were still numerous and favorable. To be more certain, the seeds were distributed to several botanical gardens situated at remote distances from each other, and at different altitudes. The localities chosen were the Garden of Péradénia, in the 7th deg. of latitude; that of Otacamund in Nilgherry, in the 11th deg., and at an altitude of 7125 feet (2200 mètres); and, finally, the establishment of Darjeeling, in the Himalayas, in the 27th deg. In this last locality, five

trials of the culture of cinchonas have been made, at altitudes of 1050, 1325, 2100, 2650, and 3200 feet. At the end of the year 1865, these five places alone possessed 37,382 cinchona plants, of 5 varieties, viz., the cinchona succirubra,* calisaya, micrantha, officinalis, and pahudiana. It is scarcely necessary to say that the care of these plantations was confided to men whose skill left nothing to be desired. It was impossible to manage these experiments any better; and they will always remain as models of their class.

It might have been expected that, at some point or other, failure would take place, but, on the contrary, in every one of the places designated, in Ceylon, in Nilgherry, at Darjeeling, success has crowned the efforts of the experimenters. Thanks to their intelligent perseverance, it is now known that certain species succeed better in the north of India than in the south, and conversely; and in one soil better than in another. What was not less important to prove, was that these expatriated cinchonas contained the alkaloids which gave value to the American tree; and here success has exceeded all hope, chemical analysis finding these alkaloids in their leaves and bark; and already they have been applied to the cure of intermittent fever. The fructification of a species sent by Dr. Hooker, has set a seal to the experiment, and all the other specimens will bear fruit when at a proper age.

* The best species for cultivation would be the *C. pitayensis*, which comes from New Grenada; it has been described by M. Rampon as being very rich in quinia and cinchonina. (*Ann. de Thérap.*, 1866.)

ON CINCHONIA, AND PRESCRIPTIONS HAVING IT AS A
BASE. (A. Devot.)

Ever since the regretted M. Delondre, whose kindness towards me was manifested on more than one occasion, put in my possession a quantity of the sulphate of cinchonia, I have continued to experiment with this salt as a febrifuge, and I can again give assurance of its efficacy; to such an extent do I make use of it, almost exclusively in my hospital service, and particularly in my pauper practice where cheapness is of the greatest consideration. The possibility of effecting a cure in intermittents, quite as surely, and at much less expense than with the sulphate of quinia, is an established fact for me.

(I have procured at public sale in Havre a considerable quantity of cinchonia, at about \$2.85 a pound (30 francs a kilogramme), while it is quoted at \$11.40 a pound in the prices-current.)

Its extravagant cost is to be regretted. As with the sulphate of quinia, its action must be maintained to prevent relapses; the form which has succeeded constantly in my hands, is based upon an excellent preparation of the syrup of the iodide of iron and quinia, of which the efficacy in scrofulous affections has been pointed out. I simply substitute the cinchonia salt for that of quinia, thus:

SYRUP OF THE IODIDE OF IRON AND CINCHONIA.

Take—

Iodine,	2½ drachms.
Iron,	1 drachm or more.
Water,	10 drachms.

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Digest them at a gentle heat until the solution is discolored. Filter and add—

Simple Syrup, 70 ounces.

Then add—

Sulphate of Cinchonia, 30 grains.

Acidulated Water, 10 drachms.

Dose: A tablespoonful in scrofulous affections.

To prevent relapses in intermittent fever I make a stronger syrup, thus: Take Syrup of Iodide of Iron and Cinchonia, the above quantity (about 70 ounces), and add—

Simple Syrup, 14 ounces.

Sulphate of Cinchonia, 30 to 60 grains.

Acidulated Water, 10 to 15 drachms.

Dose: One tablespoonful daily to adults; and one or two teaspoonfuls to children, according to the age.

FEBRIFUGE MIXTURE.

R. Phloridzin, 2 drachms.

Sulphate of Quinia, 24 grains.

Mix, and divide into seven powders; one to be taken in an infusion of coffee before the cold stage.

M. Rive says this is much used in Mexico, and suggests that the remedial action resides in the quinia.

LOBSTEIN'S ELECTUARY.

In cases of intermittent fever rebellious to the sulphate of quinia in large doses, if there is any malarial cachexia, M. Huntz prescribes the electuary

already recommended by Professor Lobstein, and prepared thus:

R. Powdered Cinchona Bark, . . .	10 drachms.
“ Rhubarb, . . .	3½ “
Muriate of Ammonia, . . .	45 grains.
Simple Syrup, . . .	q. s.
To make 20 boluses.	

M. Huntz prescribes four of these daily, to be taken one hour apart, in a manner that the last may be taken one hour before the chill.

He believes that he has already obtained, by this treatment, considerable success in cases of African fever, which had already been treated with large doses of sulphate of quinia, and which bore every evidence of malarial cachexia: a pale, sub-icteric hue, puffiness of the face, anasarca and hypertrophy of the spleen and liver.

At the end of six or eight days, the use of this electuary caused a gradual diminution of the engorgement of the abdominal viscera, and the access of fever ceased. A reparative diet and ferruginous preparations completed the cure. (*Société de Méd. de Strasbourg.*)

EXTRACT OF CINCHONA IN LARGE DOSES IN THE TREATMENT OF MALIGNANT PUSTULE. (Goupil des Paillières.)

The following is a *résumé* of a thesis sustained by M. Goupil. The observations reported in detail will be read with interest.

1st. The treatment of malignant pustule and of

carbonaceous affections should be surgical and medical.

2d. The pustules should be destroyed as soon as possible.

3d. The actual cautery and potential caustics are ineffectual; they only destroy a part of the evil.

4th. Extirpation with cauterization is to be preferred when the tumor is limited and circumscribed; this method relieves the economy of the local affection.

5th. After the operation, dress the wound with a stimulating ointment, and cover the diseased part with poultices made with a strong decoction of cinchona, and sprinkled with camphorated alcohol.

6th. If the pustules are seated on the hands, arms, feet or legs, use, preferably, baths of a decoction of cinchona to which tincture of arnica is added.

7th. The extract of cinchona constitutes the basis of the medical treatment.

8th. It should be given from the very inception of the disease, in doses of one drachm and a half in twenty-four hours; if there is intoxication (?) give it in two or two and a half drachm doses in the same period.

9th. When the general symptoms have disappeared, give it in diminishing doses for several days.

10th. When there is any gastric distress, give an emeto-cathartic or laxative.

11th. Drastic purgatives may occasion inflammation, whereas, a laxative at the outset may be of service.

12th. Antiphlogistic remedies are useless and dangerous.

WINE OF BOUTIGNY.

R. Juice of the *Tropæolum majus*,
 Alcohol (86 deg.), } each 6½ drachms.
 Gray Cinchona bark, broken, }

The phosphate of lime obtained from the decomposition of 15 grains of chloride of calcium dissolved in water and poured drop by drop into a solution of 22½ grains of the neutral phosphate of soda.

Bitter Orange-peel, 30 grains.

White Bordeaux Wine, 2 pints.

Macerate for eight days with occasional agitation, and filter. (*Echo de la Presse Méd.*)

IRIS FLORENTINA.

The "Bulletin Pharmaceutique," of Milan, publishes an interesting memoir of M. Allisiardi, a pharmacist at Salleizzo, which relies upon numerous facts to prove the febrifuge action of the Iris Florentina. Experiments made by the author and others, among them Messieurs Rossi, Verone, and Bessone, have demonstrated that, in a large number of cases, this substance has been found a reliable and economical substitute for cinchona. It is administered in the form of an aqueous extract in from 2½ to 5 drachms divided into two equal doses, and given at an interval of two hours. Here is the manner in which the author obtains the extract:

R. Florentine Orris, in large pieces, . . . 2 pounds.

Water, 6 pints.

Make three macerations; the first for twenty-four

hours, and the other two for twelve hours each; express, and let the liquid repose several hours; decant, and evaporate till about two pounds remain; let it become cold, that the amylaceous fecula may separate; filter, and evaporate on a sand-bath to the consistency of an extract, which is to be put into a vessel, rejecting the scum.

With this extract, a calmative syrup for infants is prepared, as follows:

Aqueous Extract of Orris, . . .	10 drachms.
Water,	80 "
White Sugar,	60 "

Heat to ebullition. This syrup contains 10 per cent. of the extract. (*Journal de Méd. de Lyon.*)

THE EXTRACT AND SYRUP OF BITTER ORANGE-PEEL. (C. Blottière.)

The peel of bitter oranges yields 36 per cent. of extractive matter to boiling water, and nearly one-third of this, by weight, is a mucilaginous principle without taste, and having the property of inducing fermentation very rapidly. These facts once established, we have thought that it would be useful to prepare a syrup which should always contain the same quantity of extractive matter, divested of its fermentescible principle. Therefore, we have prepared an extract by making two successive infusions of the bitter orange-peel with boiling water. These infusions were evaporated on a sand-bath to a syrupy consistency, and to this alcohol (33 deg.) was added. All of the bitter extractive is soluble in alcohol, but

the mucilaginous matter is precipitated in a gelatinous mass; and when this latter has been washed several times in alcohol it becomes entirely tasteless, and consists of a mass which is very easily dried, and thoroughly insipid.

Different extracts, prepared successively with larger quantities of the peel than were formerly used, gave us identical results. After operating with 20, 40, 200, 254, 270, and 300 pounds, the qualitative discrepancies were of a minimum importance, particularly when the material employed is considered; and experience has taught me to give the preference to the bitter orange with stripped peel, or Curaçao zesté (*Citrus Bigaradia*).

The bitter orange-peel having already been recognized by most pharmacologists as a slightly stimulating tonic, we have thought that a syrup containing the active principle in fixed proportion would be an advantage, and be employed by intelligent physicians who, desiring to know exactly the efficacy of remedies, feel the necessity for preparations of always uniform strength.

Consequently, we have prepared a syrup with Madeira wine; and to mark the essential difference between it and the syrup of the Codex, have proposed to call it "*the gastrothenic syrup of bitter orange-peel with Madeira wine.*" (*Bulletin de Thérapeut.*)

SEDATIVE ASTRINGENTS.

ON THE LEAVES OF THE CARPINUS BECULUS,
HORNBEAM. (Amédée Blacher.)

The genus *Carpinus* is not contained in any work on *Materia Medica*. The leaves of this shrub, so common in our woods, and which form the beautiful arbors of our gardens, contain as much as 9 per cent. of tannin.

Their decoction produces a marked astriction upon the mucous membrane of the mouth, and the same effect is observed if the green leaves are chewed. The leaves of this plant, therefore, could be used in medicine, when an astringent is necessary, but regard should be had to the amount of tannin they contain, for they are equal in energy to rhatany. They may be prepared in all the pharmaceutical forms.

I have made a mellita, a syrup, a tincture, an aqueous and an alcoholico-aqueous extract, and these preparations appeared to act well.

Experiments made by a distinguished practitioner of this place, Dr. Poisson, have confirmed my propositions. A very convenient preparation is a decoction, used as a lotion, or gargle.

It is to be remarked that the infusion, which, without doubt, would be preferable in giving a less proportion of starch than the decoction, cannot be

used, on account of the risk of depriving the remedy of some of its activity, for I have observed an infusion, made with 10 per cent. of the leaves, still quite sensitive to reagents. A decoction is necessary to penetrate the thin but stout tissue of the leaf. Besides its medical uses, it might likewise serve in the arts as a black dye.

ON THE PREPARATION OF PAGLIARI'S STYPTIC.
(Meyer.)

The author concludes his researches: 1st, that a prolonged boiling of six hours adds nothing to the qualities of the styptic of Pagliari, and has no other result than to eliminate the larger part of benzoic acid, which is lost and is not to be found either in the crystalline deposit, in the liquid itself, or in the residue of benzoin; 2d, that at least a portion of benzoic acid could be extracted and obtained from the crystalline deposit, by operating with benzoin dissolved in water; 3d, that the liquid contains, at the same areometric degree, as much alum, benzoic acid and resin after boiling for one quarter of an hour as after six hours; and 4th, that less benzoin may be employed to obtain the same quantity of the styptic, seeing the small quantity of acid and resin this contains; and, in effect, a styptic, prepared with only one drachm and a half of benzoin dissolved in alcohol, gave me, at 6 deg. (1.044 sp. gr.), the same quantity of alum and benzoic acid as the three preceding experiments; and the crystalline deposit was almost wholly alum.

It seems to me, therefore, by modifying the for-

mula for Pagliari's styptic much time would be saved, and much expense, considering the high price of benzoin; and, furthermore, the product, at any specified areometric degree, would always be the same, without necessitating the addition of water, which evaporates, and which is very difficult to make with exactness:

R. Benzoin in tears,	2 drachms.
Alcohol, 89 deg.,	5 "
Alum,	10 "
Water,	203 "

Mix, and boil until the liquor becomes clear, and filter when cold. This liquid should mark 6 degrees on the areometer. (*Bullet. Soc. Pharm. de Bruxelles.*)

. VINEGAR OF BULLY. (Dorvault.)

The officinal formula for this vinegar is not satisfactory. The proportions of 7000 parts of water and 3500 of alcohol will not dissolve the essences. I thought at first there might have been an error by a transposition of figures, and I tried with 7000 parts of alcohol and 3500 of water, but without success; the product, although filtered several times, became turbid in a few days. I then examined the vinegar of Bully itself, and observed that it burnt like alcohol; I then fixed upon the following formula which, in odor and color, corresponds to the true vinegar of Bully:

Eau de Cologne,	2 pints.
Tincture of Benzoin,	2½ drachms.
Glacial Acetic Acid,	12½ "
Mix and filter.	

(*Union Pharm.*)

CITRIC, ACETIC, AND CARBOLIC ACID IN CANCER.

Mr. Barclay has experimented with these acids (for example $1\frac{1}{2}$ drachms of acetic acid in 8 oz. of water) applied to tumors or cancerous ulcers. The degree of concentration should depend upon the case, and should be elevated as the patient becomes habituated to its use. In this way he has seen pain quieted which had previously resisted all treatment, even when the hypodermic use of morphia had only partially succeeded. With the cessation of pain the appetite and sleep returned, and, after a few weeks, the patients increased in flesh so much as to be scarcely recognizable. This effect, Mr. Barclay attributes partly to the power which acids, more or less concentrated, have of dissolving cancer-cells. Classifying the above mentioned acids according to their individual therapeutic properties, he admits them all to be of equal service in allaying pain; but carbolie acid surpasses the others in its power of destroying fetor, and in its solvent action upon cancer-cells. (*British Med. Journal*, April 21, 1866.)

DILUTE ACIDS IN ULCERATED CANCER.

Water acidulated to the extent of $\frac{1}{10}$ or $\frac{1}{8}$ per cent. with pure liquid hydrochloric acid dissolves, as I have shown, muscles and other denuded organs. We can easily understand, therefore, how these same solutions may be used to dissolve gradually tumors of a malignant nature. This opens up a path upon which I cannot too forcibly engage

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practitioners to enter. We must have patience to repeat often the application upon the denuded tumor, by means of a hair pencil, or fine sponges, or lint, saturated with the water acidulated to the extent given above.*

CITRIC ACID FOR THE PAIN OF CANCER. (Denny.)

Mr. Denny has used, with entire success, a solution of citric acid in two cases of cancer of the breast, in one of cancer of the uterus, and in one of cancer of the tongue. In this last case he prescribed a mouth-wash of 4 drachms of acid to 150 drachms of water.

The effects were transitory, but a fréquent usage overcame this. (*Gaz. Méd. de Lyon.*)

LEMON JUICE IN POISONING BY THE EUPHORBIACEÆ. (Waring.)

The author gave, with success, lemon juice in a case of poisoning by a plant of the genus *Euphorbia*; but the practice has yet to be substantiated by new observations.

* A most convenient arrangement for applying this, and, indeed, for use wherever a camel's-hair pencil is indicated, may be had by twisting a small quantity of raw cotton into the requisite shape, and attaching it to the forked or the button extremity of a silver probe; in this way the brush is new and pure each time.—TRANSLATOR.

ALTERATIVES.

MERCURIALS AS PREVENTIVES OF CHOLERA.

M. Espagne announces that mercury and its salts possess an action preventive of cholera epidemica. He bases this opinion upon personal observations made in the hospitals of Montpellier in 1849 and 1854. In these hospitals it was noticed that no deaths from cholera took place among syphilitic patients and others who were under a mercurial treatment.

OINTMENT OF SULPHOCYANIDE OF MERCURY. (Lutz.)

Sulphocyanide of Mercury, . . .	6 grains.
Lard,	5 drachms.
Mix. Useful in psoriasis.	

LOTION OF IODO-CHLORIDE OF MERCURY. (Devergie.)

R. Iodo-chloride of Mercury (Boutigny's	
Salt),	5 ounces and 5 drachms.
Iodide of Potassium,	3 ounces.
Distilled Water,	3 ounces.
Glycerine,	3 ounces.

Triturate the iodo-chloride of mercury with the iodide of potassium, adding the water drop by drop; pass through a small filter, and add the glycerine.

This is intended to replace Boutigny's ointment. It is painted upon the diseased parts with a hair pencil, every night; and in the morning it may be washed off with water, using a sponge for the pur-

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ed part; and, I may add, it is often retained in the folds of the mucous membrane, where it develops a caustic action which is rather prejudicial than advantageous.

These serious inconveniences can be remedied, says the author, by substituting the yellow amorphous oxide for the red crystalline.

The yellow oxide, prepared by precipitation, is destitute of any crystalline form, and, consequently, does not irritate the conjunctiva, nor remain adherent to it.

Two forms of the oxide of mercury are known: 1st. The common crystallized red precipitate, prepared by the dry method, is the red oxide. 2d. The amorphous, or yellow oxide, is prepared moist from the nitrate or the bichloride of mercury, by precipitating with potassa. These are isomeric states of the same body.

The latter, of extreme molecular fineness, is admirably adapted to local applications—associated with ointments, particularly cold-cream, in proportion of from 16 to 60 grains to 1 ounce of excipient. The mixture should be thorough. This preparation is indicated in conjunctivitis and in phlyctenular keratitis, as well as in all their combinations. (*Ann. d'Oculistique.*)

LIQUOR DONAVAN-FERARI. (Solution of Hydriodate of Arsenic and Mercury, of the St. Ursula Hospital at Bologna.)

In Gamberini's work, entitled, *Pruritus in Cutaneous Diseases of a Venereal Character*, are the following

words: "I have asked myself if the union of these three powerful remedies (iodine, arsenic, mercury), which compose the Liquor Donovan-Ferari, had been the cause of success; for it is certain that the use of it has been extensive, and the cures thorough and permanent." Following the example of this author, I have deemed it my duty to publish a series of new cures, effected in the wards of St. Ursula Hospital, as well as in my private practice. The formula of the liquor used at the hospital is as follows:

R. Iodide of Arsenic, 1 drachm. *grs iiii*
 Distilled Water, 8 1/2 ounces. *℥ xxx*

Mix, and dissolve by heat in a glass matrass, add:

Biniodide of Mercury, 2 drachms. *grs vi*
 Iodide of Potassium, 15 or 20 drachms. *grs 45 or 60*

Filter, and preserve in a brown bottle, well corked. The solution thus obtained is limpid, and of a light straw tint; one ounce containing a little over two-thirds of a grain of iodide of arsenic, and about double that quantity of biniodide of mercury.*

The dose varies from 4 to 100 drops, or more, in a half-glass of distilled water, three times a day, increasing by one or two drops each day. While taking this remedy acid substances must be avoided; and, that it may be well borne, it must not be taken while fasting, nor combined with narcotics.

Every one who has seen the numerous cures ob-

* It will be seen that this liquor is but about one-fifth or sixth of the strength of the Donovan's Solution of the U. S. P.—TRANSLATOR.

tained by this method, can bear witness that no one has suffered from it; if any gastric disturbance supervened, the diminution of the dose or suspension of the remedy, with a small dose of carbonate of magnesia, has quickly relieved it. (*Bullet. Thérap.*)

ARSENIOUS ACID IN CHOLERA. (Cahen.)

His memoir on Cholera is the last work of Cahen; it was published in the "Union Médicale" of the 30th October.

Twenty cures in twenty-four cases is the great result announced by Cahen, and he adds: "Opinion is not uniform with respect to the efficacy of arsenic; it has been contested by those, principally, who have never tried it, and they are a large majority; and, next, by those who have used it incompletely, or tardily. As to the first, this note, if they take the trouble to read it, will be, I hope, a satisfactory reply; to the second, I would say that it is not in $\frac{1}{64}$ or $\frac{1}{32}$ grain doses in twenty-four hours that it should be given, but $\frac{1}{4}$, $\frac{1}{2}$, $\frac{3}{8}$ of a grain, or more, in the same period; it must not be delayed until other means shall have failed, or death commenced; but, from the beginning of the algor, the arsenious acid must be prescribed in broken doses of $\frac{1}{32}$ part of a grain, in granules."

ARSENIOUS ACID FOR HEMORRHOIDS. (Parvin.)

The author has prescribed, with success, eight drops of Fowler's solution, each day for fifteen days. It had already been used in passive hemorrhages.

ARSENIC IN SYPHILIS.

The ptisan of Feltz, so much used in constitutional syphilis, contains arsenious acid.

The following facts lead us to believe that its useful properties are due to the arsenic.

Two soldiers presented themselves with syphilitic pustules following the usual primary symptoms. For several months all the mercurial preparations and iodide of potassium were tried, without effect; and by means of the arsenious acid, in $\frac{1}{3}$ part of a grain each day, the crusts dried up promptly, the ulcers cicatrized, and the cure was speedily effected. (*Escholiaste Méd. Lisbon.*)

ARGENTIC STOMATITIS, ARISING IN THE COURSE OF THE TREATMENT OF PARALYSIS BY NITRATE OF SILVER.

Some of the accidents are known, which the internal use of preparations of silver give rise to, when taken in too large doses, or when too prolonged,—acute poisoning, slow poisoning, bronzing of the skin, &c. But we have not hitherto known—at least we do not know of its having been pointed out—that silver may cause stomatitis, like mercury. A singular case of this kind was recently communicated to the “Bulletin Général de Thérapeutique,” by Dr. Guipon, chief physician to the Hôtel Dieu of Laon.

A woman, aged 47, came into the hospital, under the care of Dr. Guipon, to be treated for a complete hemiplegia of the left side, with paralysis of the

tongue and vocal organs, following upon cerebral congestion; she was put upon pills of nitrate of silver, thus formulated:

Crystallized Nitrate of silver,	. . .	$\frac{1}{4}$ grain.
Extract of Gentian,	. . .	$\frac{3}{4}$ "
Inspissated juice of Lettuce,	. . .	$\frac{1}{12}$ "
Mix, and make one pill.		

This treatment lasted about two months, the nitrate being given at first in the above dose, but being increased by the same quantity, about every three days, until the maximum dose of $1\frac{3}{4}$ grains was attained, and this was continued without any inconvenience for eighteen days. It was only after the eighteenth day that a diminution of the dose by $\frac{1}{4}$ of a grain each day was begun, in order to arrive rapidly at its complete suspension. At the period when the patient was taking only $\frac{1}{4}$ of a grain (she had then taken in the aggregate about 71 grains in sixty days), she complained of a pain in the mouth, and presented signs of stomatitis, characterized by tumefaction and a dark red color of the gums, with violet border; an extreme sensitiveness of the mouth; hot and metallic odor of the breath; but no fetor or salivation. These symptoms increasing the following day, Dr. Guipon suspended the remedy, and prescribed internally a gummy solution, containing a drachm of chlorate of potassa, and an emollient gargle. The treatment succeeded. (*Gaz. des Hôpitaux.*)

POWDERED NITRATE OF SILVER IN CROUP. (Guillou.)

M. Guillou announces that, by means of an insuf-

flator, powdered nitrate of silver may be projected into the pharynx, behind the pillars of the velum of the palate, and even into the bronchi. The instrument is composed of a cylinder of wood, into which the powder is placed, of an India-rubber bottle as bellows, and of two canulæ, one straight for the pharynx, and the other bent, so as to be used for the larynx, when required. The portion of the cylinder where the canula is attached is fitted with a small sieve, which effects a subdivision of the powder, and prevents its accumulating at any one point of the air-passages.

The patient should be conveniently placed, with his head thrown back and immovable. The operator, in front of him, depresses the tongue with one hand, and in the other holds the insufflator. By compressing the India-rubber bottle quickly, resting it upon the superior dental arch, the powder is thrown from the straight tube upon the diphtheritic exudations of the pharynx, windpipe, and nasal fossæ. The bottle should be strongly compressed by rotating it five or six times.

The operation is completed in two or three seconds, the pain from the nitrate of silver being felt a little later. If the patient present symptoms of incipient croup, the first insufflations should be made during a forced inspiration, that the powder may penetrate the larynx, and arrest the affection at its starting-point, before the pain has commenced.

Should the exudations reappear, the insufflations must be repeated.

The canula must be cleansed, and the nitrate of

silver kept well stopped in a vial. M. Guillou first used fused nitrate of silver mixed with powdered charcoal, but he soon recognized that there was no objection to using it alone, and abandoned the mixture.

Later experience proved that the crystallized salt was less disagreeable to the taste than the fused, so he employs the former pure, well dried, and finely powdered. When moist, it may be dried in a spoon over a candle, or otherwise.

In support of this treatment, M. Guillou reports three authentic cures, and we believe it ought to be further tried. (*Gazette des Hôpitaux.*)

CAUTERIZATION WITH NITRATE OF SILVER IN VAGINITIS. (Nonat.)

IN order that this cauterization may succeed, it is indispensable that no point of the inflamed surface escape its action. When the method fails, we may be sure, says M. Nonat, that some vaginal fold or, most probably, the utero-vaginal cul-de-sac, was left untouched. If we wish to operate with certainty in such cases, we must be provided with a good concentrated solution of the salt, with two pencils, one small one of hair, called intra-uterine, and the other large, and made of lint.

The speculum which M. Nonat uses is bi-valvular, and is provided with an end-piece (embout), as it causes the least pain when introduced into the inflamed part. The speculum is applied, the neck of the uterus being engaged between its valves, and

the cauterization is accomplished in two movements. In the first, the surgeon, taking the small pencil saturated with the solution, brushes over the entire surface of the uterine neck to the bottom of the cul-de-sac, with the greatest care. In this manner we may be certain, that if the large brush (which is then used to cauterize the vaginal surface behind the speculum, as this instrument is withdrawn) does not touch that portion of the cul-de-sac corresponding to the neck, this part will still be cauterized later, by coming in contact with the surface of mucous membrane which is afterwards moistened with the solution.

The effect of this is to increase momentarily the inflammation and the muco-purulent discharge; but in from three to six hours these subside, and the following day an amelioration may be observed. The cauterization is to be repeated every five or six days, with the same solution, until the subsidence of the inflammation is indicated by a diminished flow, and favorable changes are observed in its character. After this the concentrated solution is exchanged for a weaker one, which is to be applied less frequently, say every eight, ten or twelve days. In the intervals of the cauterizations, M. Nonat prescribes, if necessary, poultices to the hypogastrium, plunge or sitz-baths, and simple or emollient injections, the object of these latter being to cleanse the vagina of all products of secretion, or any other substances which may be lodged in its folds.

In his treatise on diseases of the uterus, M. Nonat has given a summary of a dozen cases of vaginitis,

of every degree of intensity, in which the inflammation disappeared, on an average, after four, five or six cauterizations made around the neck, and in intense and persistent cases, after seven or eight similarly made. One of these cases is remarkable for the intensity of the inflammation, which underwent no sensible improvement after twelve cauterizations made in the usual way, but which yielded completely to seven made in the manner recommended above.

These various observations, and others collected subsequently by M. Nonat, lead to the conclusion that the ordinary process of cauterization is insufficient in a certain number of cases, on account of the lacunæ which are left untouched; and, that the best method is to practise with care the "peri-cervical cauterization."

A piece of advice which M. Nonat never fails to give is, that in cases where a vulvo-vaginitis is complicated with uterine, or peri-uterine, inflammation, it should never be combated either with astringents or caustics.

Before attacking the vaginitis, its complications must be overcome, if we wish to avoid serious accidents to the uterus or its annexæ. (*Journal de Méd. et de Chirurg. Prat.*)

VILLATE'S LIQUOR.

- R. Solution of Subacetate of Lead, . . . 6 drachms.
 Crystallized Sulphate of Copper, } each, . 3 "
 " " Zinc, }
 White vinegar (of wine), . . . 5 ounces.
 Mix, and dissolve.

A slight, but very efficacious caustic, used with success by Dr. Notta, Surgeon to the Hospital at Lizieux.

Here are several conditions of success which have been pointed out by Dr. N., in the *Union Médicale*, November 20th: "It often happens that pharmacists replace the white wine vinegar by the vinegar of wood, or pyrolignous acid. This gives rise to a solution of too great causticity, one not easily borne by patients, as it causes much more pain than that prepared with wine vinegar. It is easy to distinguish the two at first sight: the solution made with pyrolignous acid, after reposing, has a blue color; that made with wine vinegar is green, with a slight bluish tinge. This is a capital distinction; for it is probable that it is from having made use of a solution prepared with pyrolignous acid, that surgeons accuse the remedy of causing excessive pain and grave symptoms of irritation and inflammation. It is certain that the use of Villate's liquor is sometimes very painful, but after several injections a tolerance is established, and it can be well borne; but it is true that in some cases the pain is so acute as to be a real objection, and patients refuse to use it. These, however, are rare exceptions, and, in almost every instance, the results obtained have been so satisfactory that patients have not had cause to complain of the pain they had endured.

"With respect to the grave inflammations produced by the liquor, the cause, perhaps, may be found in its inappropriate use. I have insisted that it should only be used in extremely chronic cases,

after the usual means have failed; and I have even cited a case where it gave rise to a phlegmon, from having been used too hastily. But when it is used only where well indicated, and when used prudently, no serious inflammatory accidents are to be feared, even in the neighborhood of the most sensitive organs of the body.

"Thus, I have used it not only without inconvenience, but with success, in a fistulous track situated close to the eye, and extending to the bottom of the orbit."

VILLATE'S LIQUOR IN CARIES OF THE MAXILLA. (D. Dumont.)

Let us select one from among several cases, showing what assistance may be had from the use of Villate's liquor in those cases of fistulous tracks which, from their chronicity, might be regarded as incurable.

Mrs. X., aged 45, delicate constitution, usually in good health, without syphilitic antecedents, was taken in February, 1861, without known cause, with an œdematous swelling situated on the lower part of the right jaw. One month afterwards, an incision gave exit to a large quantity of pus, and became the point of departure of a fistula with an abundant sero-sanguinolent discharge. For nearly a year, the treatment consisted simply of frictions with an ioduretted ointment, and emollient injections.

I was consulted for the first time in March, 1862, thirteen months afterwards, and found a thickening of the inferior border of the bone at a point below

the small molar teeth, and extending upwards one-half of its height.

The fistula occupied the lowest point, and scarcely admitted the point of a canula. The probe penetrated to the depth of three lines (1 centimètre) to a bony surface, denuded, irregular, anfractuons. The wound discharged an abundant, bloody serosity. The skin over the tumor was red, and of a violet color around the orifice. The corresponding alveolar ridge was sound, and was occupied by no teeth. General condition of the patient satisfactory.

Although a careful examination did not reveal the presence of any movable sequestra, I opened the fistula widely, and pus escaped.

Injections were made morning and evening with tincture of iodine, and lint saturated with the same liquid was introduced to the bottom of the wound. Wine of cinchona, iodide of iron, and sulphur baths were prescribed.

In fifteen days, the suppuration diminished, the swelling subsided, and the cure seemed near; but, after three months, the fistula reappeared. Ordered, injections, varying with aromatic wine, tincture of aloes, solution of sulphate of copper, and nitrate of silver.

Ten months elapsed without any marked change, when my friend and confrère, Dr. Notta, to whom I had had occasion to speak of my patient, induced me to try Villate's liquor, which had given him the best results in analogous cases.

There was slight inflammation for four days after the use of this injection; it was suspended for three

days, and afterwards repeated, and continued without interruption for seven days, at the end of which time the suppuration had completely disappeared. Three days afterwards the wound closed.

Eighteen months later, I saw the patient; the only remnant of the old affection was a considerable swelling of the bone.

I will only add a word to this full report. The affection of the bone dated back twenty-six months, and during this long period, notwithstanding the most rational and varied treatment, notwithstanding the tincture of iodine applied directly upon the bone, the skilful surgeon of Caen had effected nothing; the bone was rough and denuded, and the fistula remained persistent. In seventeen days Villate's liquor effected a cure, and eighteen months afterwards, Dr. Denis observed that there was no return of the trouble. (*L'Union Méd.*)

INJECTIONS OF CHLORIDE OF ZINC IN THE TREATMENT OF BLENNORRHAGIA. (Martinot.)

M. Martinot wishes to bring back into repute the injections of chloride of zinc, which had already been employed by M. Legouest.

"As injections of chloride of zinc, with rare exceptions, should only be used once a day, either in the morning or at the physician's visit, here is the manner in which it is effected in my service: The ward-master keeps a list of the men who ought to use injections, and gives them himself, recommending the patients to retain them for five or ten min-

utes, and he does not leave the ward until this is done. The patient should have previously urinated.

"In extolling these injections, I am not defending my property, and, therefore, cannot be accused of partiality. M. Legouest prescribed them in 1859.

"About eleven injections sufficed, and the patients only remained in hospital nineteen days on an average. All of those who had recent gonorrhœas commenced the treatment by taking copaiba alone, or with cubebs, and, towards the end of the inflammatory stage, the injection was added for two or three days more, and afterwards, the injection alone was used.

"Those who had chronic cases commenced immediately with the injections, without copaiba or cubebs. The first injection is generally painful; the subsequent ones are scarcely felt.

"Formerly, I tried to give the injections at the outset of the disease, without having recourse to copaiba, using a solution containing one-thousandth part of the zinc, but I renounced this, and now premise an internal treatment, unless the case be chronic.

"M. Legouest, who had used these injections in fifty cases, had obtained nearly the same results. He observed, as did I, that the treatment was more efficacious in blennorrhœa than in blennorrhagia, and his average approximated to my own." (*Recueil de Mém. de Méd. Militaire.*)

CHLORIDE OF ZINC IN THE DRESSING OF WOUNDS.
(Morgan.)

The absence of pain, suppuration and odor after the application of the zinc solution, induced Mr. Morgan to extend its use to wounds of all the tissues without exception—muscular, cellular, bony or serous. Before bringing the lips together, he passes over the entire bleeding surface a sponge saturated with a solution containing forty grains of the chloride of zinc to one ounce of water. The first effect is to excite the capillaries, and to induce a bloody exudation from the parts not previously bleeding. The blood then becomes thickish and pink. In repeating the application, all the superficies softens and acquires this same color. (*Lancet*.)

SATURNINE COLIC FROM ACETATE OF LEAD.
(Maisonneuve.)

A man was entered at the Rochefort hospital for an organic affection of the heart. It was an aneurismal dilatation of this organ; the dyspnoea was extreme, and the blood was not circulating at the wrist. In face of such accidents therapeutics are powerless, and can only propose to diminish the respiratory agony of the patient. After having satisfied himself of the insufficiency of digitalis and diuretics, M. Maisonneuve prescribed about four-fifths of a grain of the neutral acetate of lead. This dose was progressively increased to nearly 2 grains, and continued for fifteen days. The results were at

first satisfactory: the pulse became calm, fuller, more regular, and the respiration less impeded; but the next day, the abdomen commenced to grow painful, and the gums presented a grayish œdema. The medicine was immediately suspended, but the enteralgia increased, constipation came on, and the following days there were atrocious colics.

An appropriate treatment put an end to all this very promptly. (*Archives de Méd. Navale.*)

SUBNITRATE OF BISMUTH: ITS DOSES AND THERAPEUTIC USES. (Monneret.)

Professor Monneret, who introduced the subnitrate of bismuth into modern therapeutics, in insisting upon its being administered in large doses, has just published an article on the same subject, in the "Bulletin de Thérapeutique," of December 15th, 1866.

"The best mode of giving this salt, says Prof. Monneret, consists in teaspoonful doses,* finely pulverized, taken in a teaspoonful of sweetened water, or, better still, in broth, soup, or chocolate—that is, in any liquid which forms a portion of the daily food of the patient.

"It would be impossible to point out a less objectionable mode, one more compatible with digestion, and one in which the bismuth mixes better with the food; in a word there is no form under which it is

* I do not have recourse to such large doses as this, in chronic diarrhœa, and gastralgia.

less fatiguing to the stomach, or in which it is better suited for its office of traversing the intestines.

"It might be thought that the greatest difficulty would be experienced in giving it to a nursing infant, or even to one older. In the first case, it is but a simple operation to mix it with a little water, and to introduce it gradually into the mouth of the little patient; and in the second, to put small portions, successively, in the pap or whatever nourishment the child may take. In this way the remedy and the food are administered at the same time.

"Another preparation, equally simple and efficacious, and one which is too seldom ordered, notwithstanding its frequent indication, especially in children, is the bismuth by enema, made by mixing at least a tablespoonful in one or two ounces of water. There results a clear liquid, easy to introduce by injection; and, occasionally, the addition of one or two drops of laudanum may be useful; and of these, two or three may be given in the course of the day, without inconvenience. Indeed, it is just here that we see the marvellous effects of this salt, in that it may be used in large doses in the diseases of children, giving rise, not only to no danger, but not even to any uneasiness, and without involving a suspension of the nourishment. We cannot insist too strongly upon the advantages of this practice, because it is the only one which does not interrupt the prescribed regimen; and, in the case of children, this is of great importance, for, in diseases of the intestines, the great danger is that the physician may be obliged to diminish or suspend the food. There

results from this, as is well known, an anæmia and emaciation which too often cause death. . . .

"Everybody knows that serous fluxes from the nose, ozæna, otorrhœa, &c., are cured in a wonderful manner by placing powdered bismuth upon the exhaling surfaces; but one fact less appreciated, is the arrest of hemorrhages by this same remedy; and this is of such importance that we must offer some few remarks in regard to it.

"It is known how often epistaxis, either from local causes, or from altered states of the blood or solids, constitutes a symptom in a large number of diseases, such as typhoid fever, phthisis, certain malarial cachexias, affection of the liver, &c., &c. Often, nothing seems to arrest the flow of blood, and recourse is had to the disagreeable necessity of plugging, which interferes with respiration and deglutition; but in the wards of our hospital, bismuth is daily used in these cases, and is so serviceable as to render any other method unnecessary. A simple pinch of the powder, repeated two or three times, and given by the Sister, suffices to put an end to the accident.

"But, so far, this is nothing in comparison with its salutary effects in the grave and so often fatal intestinal hemorrhages of typhoid fever. A small teaspoonful of the salt is given every hour, mixed with a tablespoonful of water; the intestine spreads it over the entire mucous surface, by its peristaltic movement, and thus in a mechanical way, the ulcerated and exhalant surfaces are obstructed. At the

same time, cold and icy applications should always be made.

"Each time that the bismuth is given, new and fresh portions, which have not been mixed with water, must be used; thus avoiding the irritating action which seems due to an acidity which the mixture or solution acquires after standing all day.

"Bismuth is particularly adapted to the treatment of diseases of the skin, to which it is so easily applied; and this use of it has been the subject of extended investigations by surgeons and physicians. It is prescribed with success, when called for, in combating active inflammations, and to diminish any pathological secretion.

PILLS OF SUBNITRATE OF BISMUTH, OPIUM, &c.
(F. Hop, Paris.)

R. Extract of Opium,	. . . . .	5 grains.
Subnitrate of Bismuth,	. . . . .	150 "
Diascordium,	. . . . .	75 "
Thick Mucilage of Gum Tragacanth,	. . . . .	25 "
Mix, and make 33 pills.		

Useful in the premonitory diarrhœa of cholera.

SUBNITRATE OF BISMUTH IN THE DYSENTERIES OF
WARM CLIMATES. (Brassac.)

The author has used, with great success, the subnitrate of bismuth in cases of dysentery at the dispensary, and in the hospital of the "Basse Terre." "We have always," says he, "given the subnitrate according to Professor Monneret's method; com-

mencing, in dysentery, with from $3\frac{1}{2}$ to 5 drachms, we increase rapidly by $2\frac{1}{2}$ drachms daily, until 15 or 18 drachms are taken in the course of twenty-four hours. Indeed, we proportion the dose to the extent of the disease, being guided by the effects of the first dose. When convalescence is established, diminishing doses are given, continuing them in a moderate amount for fifteen or twenty days, although the patient may not have more than one operation a day. This is a precaution that we cannot too highly recommend, in order to protect the long-irritated mucous membrane, and insure a cure.

"We have never given the bismuth in broken doses, as we consider them worse than useless. Whatever quantity is prescribed, is always divided into five parts, or more, and given with unleavened bread, broth or rice water, or any other nourishing food."* (*Bulletin Thérap.*)

SUBNITRATE OF BISMUTH IN BLENNORRHAGIA, BLENNORRHOEA, AND VAGINAL DISCHARGES. (BRASSAC.)

Dr. Caby has happily applied the subnitrate of bismuth to the treatment of blennorrhagia in man, and vaginal discharges in woman.

* We have found the subnitrate of bismuth of the greatest use in the summer and teething diarrhoea of children: thus, to a child, one year old or under, we give from a scruple to a half-drachm mixed with sugar, which disguises the metallic taste of the bismuth and is very readily taken. A half-grain or one grain of Dover's Powder may be added, if necessary. These doses give to the stools a very dark, greenish-black color, due to the presence of the sulphide of bismuth.—TRANSLATOR.

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(F. Hop, Paris.)

R. Extract of Opium,
Subnitrate of Bismuth,
Diascordium,
Thick Mucilage of Gum
Mix, and make 32
Useful in the premenstrual

SUBNITRATE OF BISMUTH
WARM

The author has
nitrate of bismuth
pensary, and in
"We have always
according to P

In the Antilles, we have only treated two soldiers by this method, but in France, aboard ship, the treatment became very familiar to us.

A thick broth is made with the bismuth and boiling water, not too thick, however, to pass through an ordinary syringe. After shaking the syringe, the patient injects the mixture, retaining it about five minutes, either by leaving the nozzle of the syringe in the meatus, or by pressing the glans between the thumb and forefinger. This is to be done three or four times a day, and we have found it well to cause it to be done upon going to bed at night; after this is done, the penis is drawn up over the belly and maintained in that position until morning, when, upon first passing his urine, the patient observes a plastic mass come with it—the portion of bismuth which was deposited in the urethra from the last injection. During the night, there will scarcely have been any discharge of pus. A fresh injection is given about a quarter of an hour after the urine is voided; and it is well for the physician to superintend or instruct the patient in its use, if he would obtain all the possible benefit from the remedy.

Dr. Caby has used these injections in the acute stage of blennorrhagia, as well as in the chronic, and that without the slightest pain for the patient. With us, these injections have, from the outset, constituted the only treatment when the patient presented himself with a blennorrhœa; but when the discharge is recent and acute, and the emission of
 a painful, and when there are painful erections,
 prescribe at first cubebs in large doses, after

Fuchs' method, only commencing the injections after the inflammatory symptoms have subsided. In this manner, patients have always borne the injections well, without complaining of pain. Furthermore, we cannot admit, with Dr. Bricka (his thesis), that the principal remedial virtues of the bismuth lie in the caustic action of the nitric acid. It acts here as it does in wounds and burns, and we cannot advise, with Dr. B., that the quantity of powder be limited (23 grains) in each injection; for, from our point of view, the thicker the mixture the better it is, since its action is principally mechanical.

We have adopted this treatment on board both the "Reine Hortense" and the "Loire." And, although we have no statistics upon the subject, yet we can affirm that these injections have given us almost constant success, particularly in old gonorrhœas, called "goutte militaire," which, by their tenacity, are often a despair to those solicitous for themselves.

The subnitrate is not less beneficial in vaginal discharges. These have sometimes an extreme fetor, and their persistency often announces a phlegmasia or ulceration of the uterine neck. Should one single inflamed point, particularly the circular canal which limits the vagina above,—*one single* point escape the different topical applications prescribed for these morbid discharges, through an unfortunate propagation by continuity, all the vaginal surface participates again in the suppuration.

The anatomical conditions are here the most favorable for the use of bismuth.

With the aid of the speculum, it may be projected dry upon the entire extent of the diseased parts, after having first properly cleansed them. It is not necessary to limit the quantity of powder used but by the extent of surface to which it is to be applied. To mix the bismuth with water, and saturating tampons of lint, or cotton, with the mixture, to introduce them into the vagina, as we have seen done in a dispensary under the care of naval surgeons, seems to us to be a bad mode of procedure. This diminishes the absorbent properties of the remedy. If the conformation of the parts in man permitted us to operate with the dry powder, success would be no less certain with them than with women.

We have, several times, used the subnitrate in chronic moist eczema, in ulcerative and painful ecthyma, and it has given us the best possible results; all that could be obtained from it, locally, in diseases which are often but the expression of a general vitiated state, or of a peculiar diathesis. (*Archives de Méd. Navale.*)

LIQUOR OF BISMUTH, OR SOLUTION OF CITRATE OF BISMUTH AND AMMONIA. (Gray, Bartlett.)

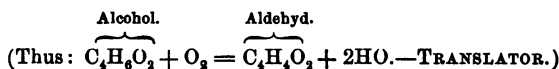
(For this preparation see foot-note to article on "Bismuth," page 1028, Wood and Bache's Dispensatory, 12th edition.—TRANSLATOR.)

ON THE USE OF THE HYDRATED SESQUIOXIDE OF CHROME IN GASTRO-INTESTINAL NEUROSES, AND IN DIARRHŒA. (I. Hannon.)

The hydrated sesquioxide of chrome (Cr_2O_3 +

5HO(O=8)) possesses remarkable properties as a therapeutic agent, and is one of the most valuable of the *Materia Medica*.

It is an excessively fine powder, of a greenish-blue or a bluish-green color, which becomes gray on tarnishing and deepens in water. When it is gradually heated it first loses its water of hydration, and becomes suddenly incandescent, below a red heat. It is tasteless, inodorous, soluble in gastric juice, in acids, and in an excess of caustic potash; it is insoluble in ammonia. Its most economical preparation consist in pouring an excess of ammonia into a solution of chrome-alum; this is obtained by dissolving 15 parts of bichromate of potassa in 100 parts of water, and adding 25 parts of concentrated sulphuric acid; after properly shaking the mixture, which is of a beautiful red color, 6 parts of alcohol are added. Under the influence of the alcohol, the chromic acid, already set free, is reduced, the solution assumes a beautiful blue tint, and chrome-alum is formed. During the process, aldehyd is disengaged as a result of the oxidation of alcohol.



When the operation is terminated, the liquid is diluted by at least ten times its volume of water, and is then rendered alkaline by ammonia, it being constantly agitated while this is being added.

The hydrated sesquioxide of chrome is thus precipitated, and must be collected and washed until

the waters no longer render the solution of a salt of barium turbid; it may then be preserved either dried or in a moist state.

The administration of this remedy is very easy; as it is not poisonous, but completely innocuous, it may be prescribed in any desired dose without fear of poisoning. In this regard, and for other reasons, it may be compared to certain ferruginous preparations, to the hydrated peroxide of iron, for example. But as there should be a limit to everything, and as the hydrated sesquioxide of chrome acts in small doses, it would be useless to prescribe from 15 to 25 drachms, as is done with the subnitrate of bismuth; nor does it, like the bismuth, require the use of any adjuvant, having sufficient activity of itself.

As this preparation, when given in excess, causes constipation, such large doses are not called for in neuroses, where only a sedative action is desired, as in diarrhoea, where the intestinal secretions are to be modified.

The following are some of the prescriptions I have found to answer well:

No. 1.

Dry Hydrated Sesquioxide of Chrome, $7\frac{1}{2}$, 15, or 30 grains.
 Powdered Sugar, a sufficiency.
 Mix, and make three powders.

Dose: One powder a half-hour before eating, in neuroses of the intestinal canal, of whatever character.

No. 2.

Dry Hyd. Sesquiox. of Chrome, . . . 45 to 60 grains.
 Powdered Sugar, a sufficiency.
 Mix, and make six powders.

Dose : One powder every two hours, in the persistent diarrhœa of phthisis, &c.

No. 3.

Gelatinous Hyd. Sesquiox. of Chrome, $7\frac{1}{2}$, 15, or 30 grains.
 Thin Mucilage of Gum Arabic, 2 ounces.

Dose : One-third of the quantity before each meal, in gastralgia, &c. Shake the bottle before using it.

No. 4.

Gelatinous Hyd. Sesquiox. of Chrome, 30, 40, or 60 grains.
 Mucilage, $2\frac{1}{2}$ ounces.
 Mix,

Dose : A tablespoonful every hour, in persistent diarrhœa.

For infants, the dose must be proportioned to the age.

These prescriptions only furnish enough each for one day, and should therefore be renewed if necessary.

With this remedy, the precept, *tutò, citò, jucundè*, is realized, which is not the case with the salts of bismuth ; and I do not doubt but that they may be replaced, with advantage, by the chrome.

For ten years I have employed the remedy, and am not seldom astonished at its efficacy in the treatment of all gastro-intestinal neuroses, of whatever kind or degree—in gastralgia, cardialgia, pyrosis, vitiated and enormous appetite, nervous vomiting,

and dyspepsia; in this last, particularly, its promptness of action is remarkable.

In all of these affections, this preparation of chrome exercises a sedative action chiefly upon the gastrointestinal nervous system. It succeeds equally well in gastralgia arising in the course of other diseases, of which it is a sympathetic effect, in chlorosis, anæmia, and in leucorrhœa. In these maladies it acts better than either iron or manganese, and like them regenerates blood globules. In cholera, and in diarrhœa succeeding cholera preventing a complete recovery, the chromic hydrate produces the best results; and it is the same thing in the persistent diarrhœa of phthisis, and in the serous diarrhœa of infants, which is so frequently met with. In these various conditions, this remedy exercises the happiest action upon the intestinal secretion. (*Presse Méd. Belge.*)

These results of M. Hannon are very interesting, the more so, particularly, when compared with *those cases of poisoning following too extensive cauterizations with chromic acid.*

DEGREE OF SOLUBILITY OF IODINE WITH TANNIN.

(Koller.)

It has been found that to dissolve 15 grains of iodine in 14 ounces of water at 120°, this must contain 50 grains of tannin. In raising the temperature, the proportion of tannin may be diminished. Pure water dissolves more iodine than sweetened water.

IODIDE OF POTASSIUM. (Payen.)

Acetic, nitric, oxalic, and probably many other acids, in quantity of 1 part in 200, do not decompose a saturated solution of pure iodide of potassium in water (when the liquid is preserved from the access of air) to the extent of disengaging iodine, even at the end of several days; the same solution, in presence of air, and under the influence of oxygen and any acid having an affinity for potassium, has free iodine liberated in it. Thus a partial decomposition of pure iodide of potassium is effected, by means of minimum quantities of various acids, under the stated conditions.

IODIDE DRAUGHT FOR TYPHOID FEVER. (Regis.)

R. Simple Syrup,	. . . .	8 drachms.
Orange-flower Water,	. . . .	5 "
Infusion of Linden,	. . . .	16 "
Concentrated Tincture of Iodine,	. . . .	8 minims.
Mix.		

In six cases in which this was used, M. Regis remarked a prompt diminution and cessation of the nervous symptoms. (*Gaz. Hebdom.*, No. 52, 1865.)

CHLORATE OF POTASSA, IODIDE OF POTASSIUM;
INCOMPATIBILITY. (Melsens A. Vee.)

Mr. Melsens administered to a bitch, weighing twenty-five pounds (11 kilogrammes), 107 grains of chlorate of potassa, every day for one month. As might be supposed, from daily observations in the practice of medicine, where this salt is largely given

internally without any inconvenience, the animal did not suffer from it. In replacing this preparation by the iodide of potassium, in 77 grain doses a day, and continuing it for one month, the animal suffered only during the first few days, and at the expiration of the month was in very good health.

But if, on the contrary, 107 grains of a mixture of equal parts of iodide of potassium and chlorate of potassa be given to a dog in the course of a day, the animal languishes and dies in from 25 to 28 days. At the beginning of the experiment the animal weighed thirty-seven pounds, and at the time of its death only twenty-six pounds. This experiment, repeated successively upon several dogs, gave similar results each time. In a number, death supervened in five days. At the autopsy, lesions similar to those produced by the iodate of potassa were found, particularly in the liver and intestines. The author had shown in a previous work that the iodate of potassa, in doses of from 15 to 30 grains, caused a dog, weighing from twelve to fourteen pounds, to die in a few days. It is very probable then, that chlorate of potassa when absorbed simultaneously with iodide of potassium yields up its oxygen to it, converting it into the iodate of potassa, a toxic agent. This reaction could not have been foreseen, for, at a cold, or moderately elevated temperature, these salts undergo no such change, and to obtain, in the laboratory, results similar to those observed by M. Melsens in dogs, a temperature much higher than that of boiling water, one at least sufficient to reduce the chlorate to a fused state, must be maintained.

There are met with, then, in the body, conditions sufficient to determine reactions which cannot be realized in the laboratory, except at a high degree of heat, or in presence of energetic acids, or under the influence of electricity.

In a similar manner are produced those numerous changes, whose results we know, but without appreciating the influences which have induced them at such relatively low temperatures. (*Bulletin Thérap., November.*)

OINTMENT FOR CHILBLAINS. (Carreau.)

R. Iodide of Potassium,	. . .	4 drachms.
Tincture of Iodine,	. . .	1 drachm.
Lard,	. . . . .	6½ ounces.

Mix.

Recommended at every stage by Mr. Guersant, who also uses, for the same purpose, two tablespoonfuls of a solution containing one tenth of its weight of permanganate of potassa to a glass of water. Lint used in dressings may be saturated with this mixture. (*Bulletin Thérap., November.*)

THE USE OF IODOFORM IN ENGLAND.

At the session of the Obstetrical Society of London of the 3d of January, 1866, two gentlemen congratulated themselves upon the successful use of this agent, particularly as an anodyne, applied locally, or given by the stomach.

It is principally locally, for the pain of cancer of the uterus, that Mr. Eastlake has used iodoform, by

applying it in the form of a medicated pessary directly to the diseased parts, and, as he says, with the best results. Dr. Greenhalgh has likewise used it as a sedative and alterative, but he gives it internally. After having tried one-fourth of a grain, he soon recognized that it could be given more largely, and now he prescribes pills, containing each from 2 to 5 grains, three times a day. Like Mr. Eastlak and upon his recommendation, he first used it for the pain of uterine cancer, but subsequently brought it to the treatment of other diseases, such as rheumatic gout, neuralgia, and most painful affections obtaining, in the larger number of cases, excellent effects. Iodoform given in a single large dose, say Dr. Greenhalgh, may give rise to nausea and vomiting, but further than this it has no objections, and moreover, is exempt from the disagreeable after-effects of opium. (*Proceedings of Obst. Society, January, 1866.*)

THERAPEUTIC EFFECTS OF BROMINE AND THE BROMIDES.

Dr. Fallini has given us, in an article just published, all that is least doubtful of what is known concerning the use of bromine and the bromides.

His article concludes thus:

1st. Bromine locally applied possesses, like iodine, resolving and caustic properties, but cannot be regarded as its equivalent.

2d. The specific virtues, or, in other words, the alterative virtues, of bromine and the bromides ma

be regarded as established, in scrofulous diseases, and in secondary and tertiary syphilis.

3d. It is proper to place the bromides, and particularly the bromide of potassium, in the category of saline sedatives, along with nitrate of potassa, which it resembles in its diuretic effects; but the bromides have, in a much more remarkable manner, the power of modifying, and producing a sedation of the phenomena of sensibility and irritability, both of animal and vegetative life.

4th. Its sedative action upon vegetative life is preferable to that of opium and other poisonous substances, because it causes no excitation and perturbation, as they do; but, at the same time, if it is more exempt from objections, it is also less decided in its sedation than these.

5th. Finally, if we admit the assertions of the original experimenters, without proceeding to a rigorous examination of the alleged facts, we must regard bromide of potassium as suited to allay convulsions of all kinds, to control the movements of the heart, spasms and non-convulsive agitations, partial and general hyperæsthesia, erethism of the genitalia, as well as to induce tranquil and reparative sleep.

But, inasmuch as the observations of M. Fallini have been made with less moderation and precision than desirable, his conclusions must be accepted with reserve. "We have not been able," says the author, "to throw more light upon this subject, which, through its novelty, is yet doubtful and obscure." (*Montpellier Méd.*, &c.)

BROMISM. (Sales-Girons.)

In reporting Dr. Marcq's case of bromism, in the *Revue Médicale* of June 30th, M. Sales-Girons mentions several accidents of the same nature, which he himself saw.

A patient with ulcerative laryngitis had been subjected to a varied treatment. Finally the bromide of potassium was prescribed in $1\frac{1}{2}$ grain doses in solution, concurrently with cod-liver oil. In fifteen days there was a marked amelioration. Under the belief that the cure could be expedited, the remedy was applied directly to the part twice a day, by means of the atomizing inhaler—the solution containing $1\frac{1}{2}$ grains to the ounce. But alas! the physician, having absented himself for one week, returned and found the patient in a state of hebetude, and a most distressing condition: insomnia, general pains, vacillating limbs, anorexia, rapid pulse, &c. Less than 15 grains of the medicine had been inhaled!

What was to be done? To eliminate the poison, to neutralize it, to restore the strength seemed to be the most pressing indications.

The bromide was suspended, and at first nitre, dog-grass,* sulphur baths, stimulating frictions, and the milk diet were ordered. Some days afterwards the dog-grass had to be suspended. The patient's appetite returned promptly, and he was greedy for

* The *triticum repens*; this plant possesses stimulant properties, is much used in France, and is called "Chiendent."
—TRANSLATOR.

his milk. Still, far from improving, the nervous depression seemed more profound: sallow tint, tremblings, fever.

By degrees, M. Sales-Girons increased his tonic nourishment, ordering juice of meat, rich soups, jellies, &c. Two months passed before the strength was restored, and the emaciation lasted even longer. Later, the patient experienced no more of the effects of this long and painful depression. By way of compensation, the laryngeal trouble seemed to be definitely cured.*

* It may be unnecessary to remark that this is a most unusual and exceptional case of bromism following the use of a bromide by inhalation. I am informed by my friend, Dr. G. D. Beatty, of this city (Baltimore, Md.), whose experience and skill in the treatment of diseases of the throat give authority to his opinions, that he daily makes use of inhalations of bromide of potassium, in ulcerative and irritable sore throat, and, in a great number of cases, he has had no instance of this kind.

In my own practice, I had occasion to order a solution of the bromide of potassium for some bronchial hyperæsthesia; six grains were given, and repeated in four hours, when the patient (a negro woman, aged forty) came to me, complaining of deafness and disturbed vision. I found she was nauseated, and had vomited; there was deafness, but no tinnitus, the sight was dim, the skin cold, pulse 45, and small and feeble, and she had sensations of faintness. The medicine was suspended, mustard applied to epigastrium, and a teaspoonful of brandy ordered every fifteen minutes, until relief was experienced. She soon improved, and in two days all the symptoms passed off. She subsequently resumed the medicine in smaller doses, experimentally, and was apparently benefited.—TRANSLATOR.

BROMIDE OF POTASSIUM IN EPILEPSY. (Voisin.)

M. Voisin, physician of Bicetre, has published a very important memoir on the use of bromide of potassium in epilepsy. I can only introduce here the conclusions of his work, referring the reader to the August numbers of the *Bulletin de Thérapeutique* for the full details. M. Voisin administered from 15 to 75 grains, twice a day.

1st. "The physiological phenomena proper of bromide of potassium are: a peculiar odor of bromine in the breath; redness of the velum palati; diminution or increase of saliva; diminution, and then complete loss of reflex sensibility of the velum, the base of the tongue, and the epiglottis—the sensibility to touch and pricking being well preserved, contrary to admitted opinions; an exaggeration of hunger; constipation; slight diuresis; depression of generative functions; diminution and retardation of the menstrual flow; a frequent catarrhal condition of the respiratory passages; a state of general hebetude; a hypnotic influence; a depression of spirits; a sedation of the excito-motor function of the spinal cord, and of general sensibility; transient impairment of memory with respect to troubles, and to writing and speaking languages; acne of the face, neck, back, chest, and limbs; a bronze color; muscular fatigue; and sometimes loss of equilibrium; and frequently emaciation.

2d. "The manner of elimination is by the skin, the salivary glands, and the kidneys.

3d. "The bromide is indicated, and is useful in

idiopathic epilepsy, particularly in patients who present a sur-excitation of the excito-motor force of the spinal cord. It is useless in epilepsy symptomatic of cerebral lesions.

4th. "The work ends with two conclusions, which differ from certain admitted opinions.

"In the first place, contrary to the current belief, bromide of potassium does not suppress sensibility to touch and to prickings, nor yet does it suspend the muscular contractility of the velum, the pharynx, and the base of the tongue. Under large doses, the individual feels very well the slightest touch or puncture, and the movements of the velum and palate are good, but the *reflex* sensibility diminishes or disappears.

"I believe that this error, generally received, arises from the failure to induce vomitive efforts when the fauces are titillated with the finger or an instrument; and, as this is the usual measure of the sensibility of these parts, it was concluded that it was wanting.

"In the second place, it has been said by Dr. Lasègue and Fallini that bromide of potassium always quieted without exciting; this is not in accordance with my observations, many of my patients presenting decided signs of excitation, although they took bromide of potassium containing no iodine.

"Finally, and here I shall stop, bromide of potassium is hyposthetic, sedative, hypnotic, and slightly alterative; it is really useful in epilepsy; it produces, generally, not an absolute cure, but modifies the disease, diminishing, and even suppressing, the

nervous erethism of epileptics, the fit, and the violent jactitations they so frequently experience."

BROMIDE OF POTASSIUM IN EPILEPSY. (Bournerelle.)

After reporting instances of the happy effects of bromide of potassium in epilepsy, M. Bournerelle expresses himself thus: "The results obtained by English physicians, similar to those so often reported by us, seem to be encouraging. Nevertheless, our confidence in the bromide is not so complete. The benefits which we have derived from it in the epileptics and hysterical under charge of M. Delasauve at the Salpêtrière, do not warrant us in expecting certain cures from this agent."

BROMIDE OF POTASSIUM IN SLOW MERCURIAL POISONING. (Bucquoy.)

M. F. Bricheteau has published, in the valuable periodical under his direction (*Bull. Thérap.*, April, 1866), an interesting article, made up from the service of M. Bucquoy, which proves that in cases of slow mercurial poisoning, where iodide of potassium has failed, recourse may be had, with success, to the bromide, to the extent of thirty grains a day.

Its administration may be extended to cases of slow lead poisoning which do not yield to purgatives, to sulphides, or to iodide of potassium.

BROMIDES OF POTASSIUM, CADMIUM, AND AMMONIUM.
(Belgrave.)

Here are the conclusions of M. Belgrave's memoir: *Bromide of potassium*, a sedative to the cerebro-spinal system, is also antiphlogistic in its action. It weakens the pulse, depresses the strength, allays nervous irritability and mental excitement, and reduces in epileptics the number of accessions. It combats efficaciously congestion of the encephalon, and of the spinal cord; its action seems contrary to that of opium, and it constitutes an anaphrodisiac of equal activity in either sex.

Its action once established continues for an indefinite period, and may be maintained by small doses.

The bromide of ammonium differs from the bromide of potassium in point of energy, causing neither weakness nor depression.

What we know of the *bromide of cadmium* induces us to regard it as an irritant to the mucous membrane of the alimentary canal. Its sedative effects, of short duration, yet well marked, resemble the depression which follows the use of an emetic or purgative, and are not at all like nervous sedation. The rapidity of the disappearance of its sedative effects, gives support to this opinion; consequently the benefits attributed to the salt are probably due to the evacuations it produces. It may, therefore, be compared to tartar emetic, or sulphate of zinc, observing, however, that it acts more promptly, more certainly and energetically than either, and is three times stronger than tartar emetic, and twelve times stronger than sulphate of zinc.

PARASITICIDES.

TREATMENT FOR TÆNIA. (Fauvelle.)

The case was one of a little girl treated without success by the bark of the root of the pomegranate.

M. Fauvelle instituted the following treatment :

For four successive mornings, take—

1st. In a tablespoonful of honey :

Tin Filings, 3 grains.

Calomel, $1\frac{1}{2}$ "

Powdered Root of Male Fern, $7\frac{1}{2}$ "

Mix.

2d. An enema composed of an infusion of—

Tansey, $\frac{3}{4}$ grains.*

Oil of Turpentine, $2\frac{3}{4}$ "

Ether, $\frac{3}{20}$ "

On the fifth day take six grains of jalap and as much rhubarb, followed by an enema of calomel and marshmallow.

The first two days of treatment, the child passed no more fragments of worm, as was habitual, but the third day, it discharged about a yard and a half. The slight purgative on the fifth day produced five

* The quantities in the original, are respectively 4, 16 and 1 centigrammes, but it is evident that grammes were intended, in which event, the quantities given above should be multiplied by 100.—TRANSLATOR.

stools, and expelled another half-yard of tænia, including the cephalic extremity. (*Journ. de Méd. et de Chir. Prat.*)

DESCHAMPS ON PREPARATIONS OF MALE FERN.

The male fern is efficacious in cases of tænia solium and *T. nana*. M. Deschamps prefers to the ethereal extract, one made with alcohol at 80 degrees; and it is the basis of the following preparations:

Potion.—Dissolve the resinous matter in a small quantity of alcohol at 70 degrees, add $2\frac{1}{2}$ drachms of gum arabic, and $7\frac{1}{2}$ drachms of simple syrup; mix this mucilage with 25 drachms of an emulsion containing 10 drachms of pumpkin seed.

Electuary.

R. Resinous matter of Male Fern, 15 to 30 grains.
Powdered Liquorice, . . . 1 to 2 drachms.
Alcohol and Syrup, . . . q. s.
Mix.

Dissolve the resinous matter in a small quantity of alcohol at 70 degrees, add the powder, triturate, and mix with simple syrup to the consistence of an electuary.

Pills.—To prepare pills, the same substances are employed, using less syrup, and adding from six to twelve grains of powdered gum arabic. (*Bull. Thérapeut.*)

M. Trousseau prescribes from six to ten capsules containing each $7\frac{1}{2}$ grains of the oleo-resinous extract of male fern; giving one capsule every ten

minutes. One hour later, give from two to four "pearls" (capsules) of ether, and two hours after this, one ounce of castor oil. This is a very simple means of expelling the *tænia solium*.

TÆNIA; TREATMENT WITH PUMPKIN SEED.

(Vedder.)

1st. Administer the remedy if any joints of the worm are passed.

2d. Diet for forty-eight hours before using the remedy.

3d. Take in the morning three or four tablespoonfuls of dried seed deprived of their envelopes, and pounded with sugar.

4th. In a half hour, take 2 ounces of castor oil.

THE INJECTION OF MALE FERN INTO HYDATID CYSTS. (Pavy.)

After puncturing the cyst and extracting a liquid rich in chloride of sodium, with numerous hooks of the echinococcus, Mr. Pavy injected the following:

R. Impure Extract of Male Fern,	30 grains.
Liquor Potassæ,	80 "
Distilled Water,	6½ drachms.
Mix.	

A slight transitory pain resulted, followed by vomiting, diarrhœa, some fever, but no trace of peritonitis. Four days afterwards, the area of redness was less extensive, the volume of the tumor considerably diminished, and its limits were less easily mapped out.

On the twenty-third day the patient left the hospital, feeling no more uneasiness.

She was seen six months afterwards in the enjoyment of good health, and in the place of the tumor there was a simple induration occupying the right hypochondrium. (*Lancet*, for Sept.)

This is encouraging, but the greatest prudence is necessary in practising injections into hydatid cysts of the liver.

TREATMENT FOR ITCH. (Lippert.)

R. Liquid Storax,	. . . . .	12 drachms.
Alcohol,	. . . . .	6 "
Olive oil,	. . . . .	3 "

Mix; frictions morning and night;—do not irritate the skin.

PREPARATIONS FOR ALOPECIA.

1st. Commence with 3 grains of iodide of potassium, three times a day, continuing it for one or two months, then use the following lotion:

R. Tincture of Cantharides,	. . . . .	15 minims.
Spirits of Rosemary,	. . . . .	15 "
Elder-flower Water,	. . . . .	5 drachms.
Glycerine,	. . . . .	5½ ounces.
Mix.		

Wash the head with this lotion, morning and night. The liquid may be painted on the part with a camel's hair pencil.

If at the end of seven or eight weeks there is no amelioration, replace the iodide of potassium by three tablespoonfuls of cod-liver oil. The last must be insisted upon. Change of air may be a useful adjuvant.

2d. M. Atkinson, of Rochester, has had some good effects from lotions of creasote, acetic acid, and spirits of nitrous ether, in recent baldness. The tincture of cantharides, with castor oil and spirits of nitrous ether, may be also prescribed. (*Montpellier Méd. — Bulletin Thérap.*)

THE USE OF MERCURIAL COLLODION FOR SYPHILITIC MACULÆ.

Dr. Leclerc observed numerous maculæ remaining in the case of a young woman who had been successfully treated for syphilitic papules. These red spots, which could with difficulty be made to fade upon pressure, were, for the most part, situated upon the face, chin, and neck. Alkaline baths, corrosive sublimate baths, and sea-baths, made no impression upon them, and the patient was in a state of despair.

Dr. Leclerc then tried brushing them over with the following solution :

R. Bichloride of Mercury,	10 grains.
Collodion,	5 drachms.
Mix and dissolve.	

In five days the spots were scarcely apparent, and three applications of the solution made them disappear entirely. Its use had no other undesirable effect than to produce a slight pruritus, which was, however, very bearable. (*Presse Méd. Belge—Bulletin Thérap.*)

PRURITUS; THE MEANS OF COMBATING IT EXTERNALLY. (Bazin.)

As an external means, M. Bazin extols fresh baths, which are often very soothing, baths containing alum, bicarbonate of soda, or corrosive sublimate. But sulphur, steam, and sea baths are formally contraindicated, on account of the too active excitement they produce. In general, we are contented to combat pruritus with ointments, but M. Bazin does not attribute any great efficacy to them. They seldom do more, says he, than change the nature of the pruritus, or substitute for it another less supportable pain.

With regard to ointments, that with chloroform may be used, but better still the following :

Morphia,	.	.	.	.	.	$\frac{1}{2}$ to $1\frac{1}{2}$ grain.
Axunge,	.	.	.	.	.	$7\frac{1}{2}$ drachms.

This ointment does not allay the itching entirely, but it gives rise to a smarting sensation which is less painful than the other.

But to return to preparations more efficacious than ointments. These are lotions with diluted glycerine, soap-suds, vinegar and water, decoctions of poppy-heads or of hyoseyamus, tar-water, or simple lotions of cold water, to which patients instinctively, and with great relief resort.

A solution of 1 part of subacetate of lead to 400 or 500 parts of water, and one of 1 part of corrosive sublimate to 1500 parts of water, merit more confidence than anything else which may seem to be indicated. (*Journ. de Méd. et Chir. Pratiques.*)

GENERAL THERAPEUTICS.

EXPERIMENTAL THERAPEUTICS.—CLASSIFICATION.

(G. Sée.)

I reproduce textually the generalities of experimental therapeutics, and the bases of a new classification proposed by M. G. Sée. They are as remarkable for elevation as for novelty of idea.

I. AN ESSAY ON THERAPEUTIC CLASSIFICATION.

(Extract from the *Nouveau Dictionnaire*, tome ii, 1865, p. 705.)

The therapeutic classifications generally admitted repose upon three kinds of data :

1st. The botanical or chemical characters of the remedy.

2d. The effects produced upon the forces of the organism.

3d. The curative results.

The exact researches in experimental physiology have proven that plants of the same family may possess the most distinct and opposite properties. The same thing maintains with regard to chemical groupings; and the *materia medica* cannot be segregated into metalloids, metals, hydro-carbons, nitrogenized bodies, alkaloids, &c. Indeed, in the same series, there would be danger of confounding all the active principles of opium, cinchona, the *solanaceæ*, *strychnia*, &c.

It suffices to make a single comparison to demonstrate the serious objections to this system.

The didactic classification is based upon the curative effects of remedies. Authors have thought they recognized in the different substances of the mineral and organic kingdom antiphlogistic, antispasmodic, febrifuge, antiscrofulous, antisyphilitic virtues, as if there really existed remedies for inflammation, spasms, fever, serofula, and syphilis; but clinical and physiological experimentation have long since consigned these ideas to their proper place. Every one knows what has become of the most highly vaunted specifics, like mercury and iodide of potassium; they may cause morbid manifestations of syphilis to disappear, but they leave the diathesis untouched; that is, they are incapable of neutralizing the virus. Remedies known as diuretics, diaphoretics, &c., owe their denomination to a still more restricted knowledge of their mode of action. If they, now and then, induce diuresis, or perspiration, yet they are none the less for this excitants or paralyzants of the nervous system. Thus ammonia, considered as a diaphoretic, excites the motor nerves and the muscles; among diuretics, nitrate of potassa paralyzes the heart; veratria weakens the muscles; digitalis increases the force of the heart's contractions and the arterial tension.

It is for us, then, to find out how diuresis is produced: whether it be by the agent increasing the pressure in the renal arteries or veins, as digitalis does, or, like nitrate of potassa, by exciting the kidneys at the moment of its passage through the tubuli: radically different corollaries in the two cases.

The same is the case with remedies confounded

under the head of narcotics or hypnotics. Narcein, morphia, atropia, all produce narcotism; but narcein operates directly upon the encephalon, atropia primarily upon the heart and vessels, its narcotic effect being only consecutive, and often, indeed, wanting entirely. The dynamic actions selected as bases of classification may, therefore, fail, and the remedy proclaims the falsity of its title.

It is, really, that conclusions are drawn from results obtained in certain diseases, and starting from such unsettled data, analogous effects are attributed to a remedy in other conditions, normal or morbid; but the analogy is as deceptive as the so-called remedial action. The basis of classification is so fragile only because little reference has been had to the very principles of physiological action.

First Class: Remedies and Poisons acting upon the Nervo-muscular System.

a. Upon the heart. A large number of substances act upon the heart or nerves; they constitute one of the most important groups of the materia medica, and deserve a special study (*vide post*).

β. Upon the nerves of sensation. Some substances paralyze, primarily or secondarily, the nerves of sensation (anæsthetics, chloroform, ether, amylene).

γ. Upon the muscles and motor nervès. Ammonia may be considered as the type of excitants, and curare as the type of paralyzants of the motor system.

δ. Upon the encephalon. Opium and its different alkaloids.

ε. Upon the spinal cord. Strychnia, conia.

Second Class : Remedies which Modify Nutrition.

a. Medicines which assist nutrition. These are substances which arrest temporarily disintegration and fulfil to a certain extent the office of alimentation (alcohol, coffee, tea).

We have two means of judging of the progress of nutrition, for, really, this disintegration of the materies of the organism is signalized by two ultimate products: carbonic acid, which is the final stage of the retrogradation of hydro-carbonaceous substances, and urea, which is the last representative of the downward metamorphosis of protein bodies. When, under the action of a medicine, the production of carbonic acid is diminished, and when the amount of urea eliminated in the urine is less than normal, we say that this medicine spares nutrition by impeding the disintegration of the organs and tissues of the body.

β. Medicines which promote nutrition. Cod-liver oil, iron, &c.

γ. Medicines which expedite disintegration. There are some medicines and poisons which obstruct the process of nutrition. And as soon as an organ ceases to be nourished, and, consequently, to perform its functions, it rapidly enters upon a retrograde transformation, *i. e.* a fatty degeneration. We shall designate these poisons under the name of *Steatogenes*, and shall consider them in a special chapter.

Third Class: Remedies which Modify the Blood.

When medicines or poisons alter the blood-globules, a simultaneous change takes place in the histological elements of other organs. If they have no special operation upon the globules, they affect still more rarely the plasma, which remains intact and entirely passive; in this event the blood is only a vehicle,—as is the case with the poisons of the nervous system.

The gases of the blood may be modified, through the operation of chemical and physical laws, by the admission of other gases (oxygen, compressed atmospheric air, nitrous oxide, carbonic acid, carbonic oxide).

When an excess of carbonic acid is introduced into the blood, which already contains 64 volumes in 1000 of this gas, the elimination of the normal carbonic acid is to a certain degree, obstructed; the blood remains venous, and under this influence anæsthesia may supervene.

The contrary takes place when oxygen is freely supplied. The blood remains florid, and arterial in character. Finally, oxide of carbon, which is a true blood-poison, has such an affinity for the globules that it drives out their oxygen, and prevents its association with them.

It is seen then, in a general way, that save the gases which modify other gases in the body, there exists no poison which affects the blood exclusively.

Fourth Class : Remedies which Modify the Organs of Elimination.

A large number of medicines are eliminated by the liver, kidneys, and the mucous membranes, which are the true organs of elimination, and modify profoundly the organization of the glandular or eliminating structure; and the resulting modification is, often, an element which determines the therapeutic application of drugs. For example: Turpentine and sulphur are eliminated by the bronchial mucous membrane, which is modified by their passage through it. Alkalies have a special action upon the ciliary epithelium of this same membrane, and it is this fact which renders alkaline waters, and especially those of Ems, of real value in laryngo-bronchial affections.

The mucous membrane of the bladder and urethra are modified under the influence of copaiba, and other balsams which are similarly eliminated; and the same applies to the buccal mucous surface, through which chlorate of potassa passes; and to the skin and conjunctivæ in their elimination of arsenic.

So far, this is only an attempt at a classification founded upon still imperfect physiological data, experimentation taking the place of purely empirical observation.

It is by following the medicinal agent in the interior of the body, and by studying its elective course; it is through a knowledge of its elimination, and through study of its action upon each tissue and

each organ (the same agent being analeptic, or steatogenous (arsenic), according as its use is of short or long duration), that we may be able to establish the true principles of the materia medica, and to build a really scientific therapeutic structure, which shall be above the attacks of empiricism and sophistry.

Correlation of the Different Actions (Nervous, Nutritive, and Eliminative) of the same Agent.

An intimate connection exists between innervation and nutrition, and it is, therefore, not surprising that certain substances affect the nervo-muscular apparatus only after having rendered more active, or moderate, the process of assimilation.

Thus alcohol, in small doses, slackens the respiratory combustion, and the carbonic acid expired is diminished, at least temporarily; but at the same time alcohol excites the nervous system, particularly the cerebro-spinal. Coffee, likewise, impedes the elimination of urea, by preventing, to some extent, the disintegration of organic molecules; but at the same time it excites the nerve ganglia of the heart.

It is then possible that a medicine possess several properties at one time; we must, therefore, determine which predominates, which precedes, and which one is to be utilized in a therapeutic point of view.

II. SUBSTANCES WHICH PRESERVE NUTRITION.

(Leçons Inédites de 1865.)

There are a certain number of substances, which, although strictly neither alimentary nor remedial, still obstruct, in some degree, the disintegration of tissue; these, therefore, have been classed along with food proper which goes to repair losses, and with medicines which modify the normal texture of organs, or their function. Among these are coffee, alcohol, and tea, taken in moderate quantities.

Alcohol reduces temporarily the amount of carbonic acid exhaled from the lungs; it seems, then, to offer some obstacle to the destruction of such ternary bodies as fats and sugar, which enter into the formation of the body, and which are the principal source of carbonic acid.

Coffee, or its alkaloid caffein, has a more variable influence upon the elimination of carbonic acid, but it economizes in a remarkable manner the protein compounds; it prevents the too rapid waste of the tissues; the decreased excretion of urea, which is the true representative of the destruction of the nitrogenized molecules of the body, being a proof of this.

Tea acts, in this respect, like coffee, but it facilitates respiration in a manner to favor the expiration of carbonic acid.

Finally, and strange to say, arsenic in small doses seems to possess the same properties; that it retards the metamorphosis of tissue is evinced by the diminished excretion of urea. Later, on the contrary, it quickens the circulation and the process of nutri-

tion, so that it gives to arsenic-eaters a more brilliant tint, an easier respiration, and a great aptitude for walking. But in a measure as arsenic accumulates in the organs, it determines their degeneration, and finishes by becoming a destructive poison, or steatogene. Cumulative doses of a remedy, then, produce effects different from its therapeutic doses: first, we see arsenic retarding tissue transformation, then giving activity to nutrition, and, finally, becoming an active destructive poison, steatogene, or an "atrophiant."

III. MEDICINES WHICH INDUCE DEGENERATION (STEATOGENES.) (*Leçons Inédites de 1865.*)

A certain number of medicines and poisons act upon the liver, kidneys, muscles, or other organs, producing the most serious and varied degenerations. In the first class, are phosphoric, nitric, oxalic, and tartaric acids; in the second, certain metals, as antimony and lead; in a third class, we find alcohol, which, commencing by moderating the process of nutrition, finishes by compromising gravely the repair and sustentation of the tissues.

All of these poisons have some properties in common: 1, destroying blood-globules; 2, provoking steatosis, or a granular fatty infiltration, of the liver, with or without icterus; 3, producing fatty degeneration or a desquamation of the epithelium of the tubuli uriniferi, so that the serum of the blood exudes through their walls, giving rise to albuminuria; 4, causing the muscles and the heart to un-

dergo a retrograde change (I do not allude to the dynamic disturbances of the nervous system; these are almost always secondary).

The destruction of globules takes place, under all circumstances, as soon as the poison is absorbed; and it is not necessary, as has been pretended, that there should be an ulceration, or a perforation of the stomach to facilitate the passage of the poison into the blood. In this belief, it has been advanced that the "deglobulization" of the blood, prevents the nutrition of organs, thus constituting the point of departure for a regressive degeneration. But these are two grave errors, which I have experimentally demonstrated.

Ulceration of the stomach is unnecessary in order that a poison may produce all of its effect. On the other hand, if the degeneration were the effect of the loss of globules, there would be a rigorous proportion between the solvent action of the poison upon the globules and the degree of fatty infiltration of the liver, the kidneys, and muscles; but, the case is far otherwise.

Thus, the most "steatogenous" acids are not those which attack the hæmatin of the globules most energetically; sulphuric and nitric acids produce, the most certainly, fatty degeneration, and compromise in a minimum degree the composition of the blood. The biliary acids are the most powerful solvents of the globules, but are the least "steatogenous." Moreover, it is not with fatty degeneration we always have to deal, but sometimes a true inflammation of the liver or the kidneys.

Let us suppose that the liver is fatty, and that a large number of globules are destroyed: thenceforth the hæmatin of the blood is transformed into biliary coloring matter, and jaundice ensues.

If the kidney is compromised in its excretory structure, there results a serious albuminuria, with or without traces of globules; if the inflammation is simple, the urine will contain fibrinous cylinders coming from the interior of the uriniferous tubes.

Therefore, with the view that I maintain, acids are not exclusively blood-poisons. The blood, from a histological point of view, is a true tissue, which may be poisoned like other tissues; it is thus that globules undergo a retrograde metamorphosis, and are destroyed, in a manner exactly similar to what subsequently happens with the liver or kidney. Nevertheless, this does not mean that they possess the relation of cause and effect, for, as I have shown, there is no correlation between an alteration of the blood and one of any organ; in a word, the blood is a tissue which, like all others, is affected by sulphuric, nitric, phosphoric, oxalic, and arsenic acids. But it plays an additional rôle: at the same time that it is an organ, it also serves as a vehicle by which the poison is distributed to all parts of the body, through its instrumentality the poison being brought in contact with the liver, kidneys, muscles, and nervous system.

Moreover, if the blood, thus altered or poisoned, comes into contact with the tissues, the entire organ is impregnated with it and loses its functions. Now, a state of rest invariably has a powerful effect upon

the nutrition of an organ, and soon induces a fatty degeneration. This is a prime cause of retrograde metamorphosis. If the poison contained in the blood presents exciting properties, the glandular system undergoes a granular infiltration, and even a true inflammation. In either case the loss of blood-globules is not one of the elements of the change. But why are the liver and kidneys affected before any other organ? What is the cause of this elective disposition? The simple reason is, that the poison is eliminated by these organs; the liver, as has long been known, is the channel for arsenic, antimony, and acids.

As to the muscles, they are endowed with such active nutritive changes, and their relations with the blood are so intimate and constant, that they are immediately impressed by the presence of any poison in the circulation.

To recapitulate: The blood undergoes the same changes as other organs; its globules are destroyed, and, as it is the vehicle of the poison, the eliminating organs, such as the liver, kidneys, and the dynamic structures, as the muscles; are brought in contact with it; there results, consequently, in each a retrograde transformation; a fatty degeneration, or an inflammation.

Steatogenous metals (lead, antimony, arsenic).

Several metals, among others lead, antimony, and arsenic, in large and long-continued doses, readily determine the same lesions as acids.

Like mineral acids, lead acts upon the blood, upon the glands (liver, kidneys), and upon the muscles.

Under its influence the blood is undoubtedly altered, but in a different manner from the characteristic poisoning by phosphorus; the globules are not destroyed directly by the lead, but undergo changes like the vascular structures; they perform their functions badly, a less number of them are formed, giving rise to a saturnine anæmia.

Lead combines with the protein substances contained in the plasma, particularly with albumen, perhaps also with the hæmoglobin of the globules. Hence a new cause of anæmia.

Saturnine anæmia is easy to be recognized by the vascular murmurs (bruits); by the pale hue of the integument; in workers in white lead, the skin presents a bistre tint, due to the deposition of lead, and this color is darkened by sulphur baths; sometimes there is the pale hue of anæmia; at others, there is an icteric tint, due to a diffusion of hæm-
atin in the blood, though the urine is free from biliverdin. This jaundice is perfectly independent of the pain of lead colic; it results from an alteration in the blood-globules, a true fatty degeneration produced by the lead.

Some years ago it was pointed out that in lead colic there was at first a diminution, and subsequently an increase, in volume of the liver. This lesion, without doubt, resembling acute cirrhosis with a consecutive fatty degeneration, has been almost forgotten, being only a matter of curiosity on account of its rarity. It is precisely this condition which seems to me to throw new light upon poisoning by lead; it has enabled me to assemble synthetically

all of its phenomena, and all of its consequences,—the alterations of the blood and of the liver, and the jaundice. Its pathological series, thus formulated, brings lead into relationship with other metals and the strong acids; the analogy is still farther established by the alteration of the kidneys and the albuminuria, which are the consequence of the lead poisoning, or rather of its elimination through these organs; at all events the kidneys are not impaired, and albumen does not pass into the urine until the lead arrives in the renal artery as an albuminate. Finally, lead produces alterations in the muscles, as is well known.

Arsenic.—This metal in small doses seems at first to economize nutrition; it next renders it more active, and finally induces an opposite condition; that is, it becomes a true steatogene.

Alcohol.—Alcohol, like arsenic, delays disintegration of tissue, and then acts: 1st. Temporarily on the blood and upon oxidation; 2d. In a slow and gradual manner upon the liver and bile; 3d. Upon the kidneys and urine; 4th.—On the muscles. Its action upon the nervous system is a distinct one. Alcohol does not alter the histological composition of the blood, though sometimes there are found in this fluid granulations, or particles, which dissolve in ether, and seem to be fatty in character; but besides these granulations being ascertained to be albuminous, they are far from being constant.

Nevertheless, it is upon this fact that the theory of alcoholism has been constructed.

Alcohol, it was said, renders the circulation and

respiration active, so that a larger quantity of oxygen is introduced into the system, and oxygen, endowed with an affinity for ternary bodies, seizes upon the alcohol to burn it; their mutual attraction is such that there remains no more oxygen for the fatty and albuminous principles. What is the result? The fats are no longer burnt, and, therefore, accumulate in the blood, forming the granulations already spoken of; on the other hand, fat is deposited in the liver, producing a true degeneration, and in the kidneys, which becomes the seat of an alcoholic Bright's disease.

This theory, so beautifully constructed, is founded upon error; if it were true, traces of alcohol should never be discovered in the system, but only the ultimate products of its decomposition—that is, an excess of carbonic acid in the expired air, or at least, a product intermediate between alcohol and carbonic acid, for example, aldehyd or acetic acid. But experiment proves that the blood contains neither one of these latter substances, and that so far from an excess of carbonic acid passing off by respiration, a sensibly diminished quantity is thus eliminated. Therefore, alcohol is not burnt by oxygen, but this latter remains to effect the combustion of fats, which, on this account, cannot be deposited. All the consequences drawn from the hypothesis of combustion fall, therefore, under the blows of chemical analysis.

Alcohol passes into the blood without altering it, or being itself altered (Perrin). It is eliminated naturally, and at the same time, by the lungs, the

urine, and the liver; it is even found in the cerebral substance.

In passing through the liver, it determines a fatty degeneration of its cells, or a hypergenetic irritation of the capsule of Glisson—that is cirrhosis; sometimes, indeed, a partial atrophy. At the same time it is eliminated through the bile, and gives rise to simple or complicated jaundice. In passing through the kidneys, it induces in them a fatty degeneration.

To demonstrate that the analogy is complete in every respect between chronic alcoholism and phosphoric and sulphuric poisoning, there remains one point—that is, the effect of alcohol on the muscles. These contain an enormous quantity of inosite; this is an index of the retrograde metamorphosis of myosin (Syntonin, TRANS.), which is the basis of muscular structure.

By reason of all of these lesions, drinkers, who commence by presenting a so-called plethoric aspect, finish by suffering a marked deterioration of health. This primary plethora is deceiving—it is not due to a redundancy of blood globules, but to vascular disturbances, and most often to a stasis of blood in the veinlets of the face. Soon these appearances give place to a yellow hue, indicating an altered state of the liver and of digestion, habitual accompaniments of indulgence in alcohol.

Alcohol, therefore, by its accumulation in the economy becomes a true steatogenous poison. We have seen, on the contrary that, in moderate doses, it is a true analeptic.

IV. SUBSTANCES WHICH MODIFY THE HEART'S ACTION. (Published in the Bulletin de Thérap. 1865.)

A large number of substances act upon the heart and nerves; among these some affect exclusively the tissue of the cardiac muscle, others the entire nervous system of the heart.

Poisons of the cardiac muscle.—Of all the heart poisons the sulphocyanide of potassium is the most fatal; it destroys, without resource, the entire muscular system, both of organic and animal life (animal and vegetative. TRANS.). The muscular fibres are altered, their functions are destroyed, and as the heart definitively is composed wholly of striated fibres, as soon as it is injured, life is extinguished. Veratria acts less energetically, for it does not modify in an appreciable manner the texture of the fibres, but it produces a great feebleness of the muscular system, and in the midst of this prostration the heart loses its contractile energy.

Sulphate of quinia seems to approximate to veratria, but it only reduces the pulse and heart after large doses.

These then are true poisons of the cardiac muscle, for all the nerves going to the heart may be cut, without the physiological effects of the poison being modified in the slightest degree.

Poisons of the nerves of the heart.—Most of the poisons of the heart act upon the nerve elements of this organ.

The innervation of the heart comprises three elements:

1st. *The auto-motor element*: the principle of the

heart's action resides in the intra-cardiac ganglia, particularly those situated in the sinus for the vena cava, and the ventricular walls.

2d. *The auxiliary motor element*: the medulla oblongata and the cervical region of the spinal cord contains auxiliary cardiac centres which, if excited, increase the contractile power of the heart, and cause the arteries to contract. The intermediary between these centres and the heart is the great sympathetic nerve, which is merely a nerve of transmission.

3d. *The moderator or antagonistic nerve*: the activity of the intra-cardiac ganglia and of these spinal centres is counterbalanced or regulated by the par vagum, which should be considered as a moderator nerve; for if it be excited, instead of increasing the number of pulsations in a given time, as would be the case were it a motor-nerve, it arrests the heart by causing its muscular tissue to be relaxed; but the section of this nerve increases the pulsations immeasurably; the eighth pair, then, are a sort of check, which if removed gives full play to the impulsion emanating from the ganglia.

Among the nervo-cardiac poisons, some excite principally the moderator nerves, others the intra-cardiac ganglia; and a very large number act upon the auxiliary or vascular centres. They all commence by exciting the system towards which their action specially tends, and then, in a measure as the poisoning continues or increases, this excitation gives place to paralysis. This is a common characteristic of all substances which affect the heart.

But, with regard to their ulterior effects, there are radical differences. Some, like digitalis, have a cumulative action, each dose adding its effects to those of the preceding ones; others, on the contrary, acquire a sort of immunity from harm by repetition. Three drops of nicotia generally produce toxic phenomena, but in a second attempt five or six drops are necessary to determine the same degree of poisoning. This is a species of tolerance manifested in experimenting with nicotia, and arising quickly in smokers. The reverse is the case with digitalis.

I. *Substances which modify the cardiac nerves, principally the sympathetic (digitalis).*

Digitalis acts principally upon the moderator nerves, that is upon the vagi; it excites them like an induction current; if, in effect, these nerves are electrified, the pulsations of the heart are rendered less frequent but more energetic, often diuresis ensues, and the elimination of urea is by degrees diminished; now, digitalis induces exactly similar phenomena. But poisoning by digitalis increases the tension in the vessels, which is contrary to the action of electricity, and it must, therefore, provoke some other action, which can only be a simultaneous excitation of the intra-cardiac motor ganglia; there is no other way to explain this important phenomenon.

When the excitation of the pneumogastric nerves predominates, and this is the general rule, the pulse becomes slower; but if, on the contrary, the motor element is sur-excited, the pulse commences to beat

more rapidly. These differences explain to us the discrepancies of experimenters and clinicians upon the subject of a primary acceleration or an immediate decrease in frequency of the pulse. The truth is that, under therapeutic doses, the pulse becomes less frequent, but, at the same time, the tension in the vessels increases, so that in heart disease, where we have to fear active congestions, or exudations of serum resulting from an excess of pressure, digitalis should be avoided. This is why, notwithstanding the abatement of pulse, digitalis succeeds so poorly after the supervention of dropsy. In these cases we should be guarded against its ulterior effects and its cumulative action, and, consequently, not be too swift to increase the dose. Its toxic effects are manifested by paralysis of the eighth pair, which of course causes a considerable feebleness of the contractility of the heart, and an enormous frequency in its pulsations.

II. *Excitants of the motor system or intra-cardiac ganglia.*—Coffee owes its action to caffein and tannin, which are partly lost by roasting, and to an aromatic principle, which is developed inversely with the tannin.

Caffein acts upon the economy by retarding the disintegration of tissue, and by stimulating the activity of the cardiac nervous system; it is then at once a means of economizing nutrition and of exciting the heart.

We are already familiar with the first of these effects, and the second is not less clear. When from two to fifteen grains of the citrate of caffein are in-

jected into the cellular tissue of a rabbit, or a dog, a general sur-excitation is established; in several minutes the frequency of the heart's beat is increased, the pulse amounting in a rabbit to 160 or 180, and even to 240, which acceleration lasts several hours.

In man, the circulation becomes more active, whether the coffee be taken on an empty or on a full stomach; after twenty or thirty minutes the pulse increases about ten beats, and in three or four hours becomes normal again. But previous to this, the temperature rises three or four-tenths of a degree; respiration is slightly quickened, or may remain as usual if the dose is not very large, in which event it becomes sensibly slower. At the same time, the activity of the brain is increased, sleep is prevented or delayed, the muscles become the seat of tremors, and the intestinal coats and the sphincter of the bladder contract more frequently. Coffee, therefore, excites the heart and the muscles generally.

III. *Excitants of the auxiliary nerve-centre of the heart, and of the nerves of the vessels.*—In addition to the excitants of the moderator nerves and the motor ganglia, there exists an extensive class of cardiac poisons which act upon the auxiliary or spinal centres connected with the heart, so as to induce more energetic pulsations, and, at the same time, a considerable contraction of the arteries; it is this last phenomenon we shall now consider. If the contraction extends to the arterioles which supply the spinal cord, this organ undergoes a local depletion, in-

icated by a diminution, either of general sensibility or of reflex excitability; this is what is effected by bromide of potassium, belladonna, ergot, and even nicotia. But ergot of rye excites at the same time, through the intervention of the spinal marrow, the motor nerves of the uterus, whose muscular fibres are thus made to contract.

Nicotia has a still more complex action: it excites not only the auxiliary centres but also the pneumogastric nerves; it causes a vascular contraction and an abatement in frequency of the pulse. In effect, when given in a minute dose, it increases the energy of the heart, but in large doses it arrests it, always during the diastole; but if previously a quantity of curare sufficient to annihilate the action of the eighth pair be injected, the heart continues to beat. The arrest of pulsation, therefore, is due to a peripheral poisoning of the pneumogastric nerve; it is, then, an excitation of the moderator nerve which is first produced. The heart tissue is not directly injured.

The auxiliary centres, and, consequently, the vasomotor nerves, undergo the same stimulus; the vessels are primarily contracted like when the great sympathetic is galvanized; the tension in the arteries is greatly increased, accounting for the diuresis sometimes observed; on the other hand, the muscles, receiving no longer a sufficient quantity of blood, assume a convulsive rigidity.

Thus, the action of nicotia is directed to the vagi nerves, which are at once the moderator nerves of the heart, and the auxiliary nerves of respiration.

The medulla oblongata, which gives origin to these nerves, and the spinal cord, the principal focus of the vaso-motor nerves, are at first thrown into a state of excitement, which explains all the phenomena—the slowness of pulse, the accelerated respiratory movements, the nausea, the convulsions, &c.

In other cases, all the excited nerves become paralyzed. The heart beats more rapidly than usual, on account of the paresis of the eighth pair, the musculo-motor system being thus left without moderating influence. The vessels are relaxed and dilated. The tetanic rigor yields and is followed by excessive debility, with trembling of the fibrillæ of the muscles.

Finally, respiration, at first hastened, soon becomes slower, which indicates paralysis of the medulla where the pneumogastric, the vaso-motor, and the auxiliary nerves of the heart arise.

Parallel between Belladonna, Nicotia, and Bromide of Potassium.

These three poisons all stimulate the muscles of the vascular system; the vessels contract and produce an anæmia of the spinal marrow, with diminution of its function.

Nicotia and belladonna excite, moreover, the pneumogastric nerves, those regulators of the heart; but nicotia tetanizes the muscles, while belladonna relaxes them, particularly the sphincters. Bromide of potassium produces rather a general feebleness of the muscular system.

Nicotia diminishes sensibility only in poisonous quantities, but belladonna and the bromide of potassium produce this effect, even in medicinal doses.

SULPHUR BATHS IN ALBUMINURIA. (Topinard.)

In view of the usual impotency of most therapeutic agents in albuminuria, it is interesting to point to the success of sulphur baths, in a case where cupping, purgation, tannin and other means had failed in the hands of Mr. Topinard. (*Gaz. des Hôp.*, No. 106.)

Undoubtedly, this is no novelty, as it has been often resorted to, but rarely with such persistence and determination.

For two months the sulphur was continued without relaxation, notwithstanding an intense and disagreeable eruption. Now, is it not rather to the persistence with such an active remedy that the cure is to be attributed, rather than to any direct or specific action of the remedy itself? (*Union Méd.*)

WADDING AS A HÆMOSTATIC. (Sournez.)

According to the author, wadding is efficacious in hemorrhages from lacerated or incised wounds, in epistaxis, and in the oozing from leech-bites; it should be held upon the part for a few minutes.

TREATMENT OF ASTHMA. (Ad. Devot.)

Having on several occasions observed the efficacy of the treatment which Dr. Breyné, of Polignies

(Orne), adopts in asthma, I beg, for the purpose of making it known, that you will give place in your next "Annuaire de Thérapeutique," to the two following formulæ, and a few explanatory remarks:

Formulæ extracted from Dr. Breyne's Work on General Therapeutics.

No. 1.

R. Flowers of Sulphur,	} each,	. 3 drachms.
Powdered Elecampane,		
" Belladonna Root,	. . .	1 "
" Squills,	. . .	45 grains.
Kermes Mineral,	. . .	15 "

Mix, and divide into twenty powders; take a third part of one, three times a day, in a little honey.

No. 2.

R. Infusion of Hyssop,	. . .	25 drachms.
Kermes,	} each,	. 1½ grains.
Extract of Belladonna,		
Syrup of Maidenhair,	} each,	. 6½ drachms.
Oxymel of Squills,		

Mix.

Dose : One tablespoonful every half hour.

1. Take the potion (No. 2) during the access.

2. Take the powders during the paroxysm (which lasts for a longer or shorter time, according to its intensity), and continue their use for twenty or thirty days at least, although the attacks may have diminished in intensity and frequency, or even altogether ceased. After this, all medication may be suspended, but the powders should be resumed at the slightest intimation of a paroxysm, and continued for six or eight days.

3. Each powder should contain :

Flowers of Sulphur, and	} each, . . .	9 grains.
Powdered Elecampane,		
“ Belladonna root, . . .	3	“
“ Squills, . . .	2 $\frac{1}{4}$	“
Kermes, . . .	$\frac{3}{4}$	“

This powder is to be taken in three equal doses during the day, at the time of the paroxysm; or as prophylactic; and often it may be necessary to take one-third only once a day,—upon going to bed.

4. These quantities of elecampane, squills, and belladonna, if digested for eight days in 4 ounces of 85 per cent. alcohol, and strongly expressed, give a little more than 3 ounces of tincture; if this be filtered and added to 19 ounces of simple syrup, it forms the “anti-asthmatic” syrup, of which about one ounce represents the amount of each contained in one of Breyne’s powders. Two to two and a half drachms may be given three times a day.

5. The sulphur and the kermes, which cannot be given in syrup, may be made up with a little honey and mucilage into pills, each containing 3 grains of sulphur and one-twelfth of a grain of kermes. Three of these pills are equivalent to the similar ingredients of the powder, and one may be taken three times a day. The syrup and pills are preferred by many to the powder.

6. As a drink, an infusion of hyssop, camphorosma monspeliaca, sage, or elecampane, may be allowed.

7. Burn a sheet of nitre paper, so that the fumes may fill the sleeping apartment.

8. Instead of the potion prescribed by Dr. Breyne, during the paroxysm, the following may be used :

R. Infusion of Hyssop,	. . .	25 drachms.
Powdered Ipecacuanha,	. . .	7½ grains.
Kermes,	. . .	1½ "
Syrup of Ipecac,	} each, . .	6½ drachms.
Oxymel of Squills,		
Mix.		

Dose : One tablespoonful every half hour.

9. To prepare nitre paper: Divide a large sheet of unsized paper into eight parts; dip each part into the following solution; let them drip, and dry them suspended upon cords.

Solution of Nitre.

Nitrate of Potassa,	. . .	1 ounce.
Water,	. . .	8 ounces.
Mix and dissolve.		

You perceive that I have sent you only what is practical, and in asking a favorable reception for it, I desire simply to render a service; for I wish no publicity for myself, and simply request that these formulæ and this mode of treatment, of which I have thoroughly proven the efficacy, may be brought to the notice of the profession.

TREATMENT FOR CROUP AND DIPHTHERITIC
AFFECTIONS. (Dévot.)

The treatment which has best succeeded in my hands, and which I have adopted almost exclusively for five years, is as follows :

1. Commence with an emetic, to be repeated if necessary.

2. Touch the diphtheritic spots freely with tincture of iodine, three or four times a day.

3. Let the patient gargle with cold water after each application, and every two hours use the following gargle:

R. Chlorate of Potassa,	. . . .	2 drachms.
Bicarbonate of Soda,	. . . .	1 "
Water,	. . . .	50 "
Mix and dissolve.		

4. The iodine should be continued until the disappearance of the pseudo-membranous exudations.

This treatment lays no claim to infallibility, but is the one which has been most successful in my experience. The tincture of iodine has been applied, for several days, in cases of young children, who were unable, or did not know how, to use the gargle.

IODOFORM IN CANCER OF THE UTERUS. (Greenlagh.)

From my experiments with poisons upon plants and animals, I have ascertained that the action of iodoform is as rapid as it is transitory. As soon as the anæsthetic properties of chloroform were established, I showed that iodoform should be placed in the first rank of local anæsthetics; this has subsequently been proven by the numerous reports of Dr. Moretin; and I am convinced that it is the most satisfactory method of using it. M. Moretin has successfully made use of a solution of iodoform in collodion.

I think that a saturated solution of iodoform in chloroform would be serviceable in acute pain, but

the mixture is very irritating, and should be employed with care. Several drops may be applied by means of a hair pencil, after having reddened the skin with a sinapism.

Mr. Greenlagh has used iodoform to relieve the pain caused by cancer of the uterus, and, according to him, it fulfils two indications: 1st. It diminishes the pain; 2d. It has considerable disinfecting power. It is given internally in from two to four grains, in the form of pill; and Mr. Greenlagh asserts that it acts not only as a sedative, but in a manner that arrests the progress of the disease. Four-fifths of a grain may be incorporated with butter of cacao, and carried to the neck of the uterus. Unfortunately the remedy has a disagreeable odor.

Mr. Nunn of the Middlesex Hospital has not found iodoform so efficacious as a sedative as has Mr. Greenlagh. The former has made use of it in a certain number of cases of cancer and epithelioma of the uterus, the lips, and the tongue, and in facial neuralgia; from these experiments he concludes that iodoform acts well enough locally, but that internally it is most unreliable; and given in doses amounting to nearly 4 grains daily it produces no more sedation than when $\frac{1}{4}$ or 1 grain is given; but the large doses have the disadvantage of producing nausea. (See page 167.) (*Lancet*.)

CHARCOT ON THE ACTION OF REMEDIES IN GOUTY SUBJECTS.

The action of some remedies, as might *a priori* be supposed, offers in gouty subjects certain special

characters. Thus, lead, given in therapeutic doses to arrest hemorrhage, has speedily produced a metallic impregnation, with the gingival margin and saturnine colic. (Garrod.)

Mercury, according to Garrod and Bence Jones, induces salivation more rapidly in gouty patients than in others. And I may add that opium should be administered to subjects of chronic gout only with the greatest reserve, if there is any evidence of renal trouble, since in these this remedy has determined cerebral accidents of an intensity greatly disproportionate to the dose employed. (*Gaz. des Hôp.*)

TREATMENT FOR POISONING BY PHOSPHORUS.

Thus far, therapeutics has been powerless against poisoning by phosphorus. The following is a mode of procedure proposed by Professor Bamberger; but before making it known we shall see upon what it is based.

When a small quantity of a solution of sulphate of copper is added to water containing fragments of phosphorus, and the mixture is moderately heated, at the end of a few minutes the fragments are observed to assume a black color, from the formation of phosphide of copper; a little later they are covered with a deposit of red metallic copper, which gradually increases until all the copper is thus precipitated and the liquid decolorized; in this condition no reaction shows the presence of copper. Now the vaporization of phosphorus treated in this manner is completely prevented; it does not exhibit any

luminous phenomena in the dark, and it requires quite an elevated temperature to develop its characteristic odor.

This result is obtained much more speedily when, instead of fragments of phosphorus, the paste of phosphorus matches is used.

Would this change take place in the stomach? M. Bamberger does not doubt it; but the emetic action of the sulphate of copper must be borne in mind, for it would, without doubt, be vomited within a short time after swallowing it. This, doubtless, could be avoided by using in the place of the sulphate, the carbonate of copper, which is insoluble and is rapidly reduced by phosphorus in the presence of a small quantity of acetic acid. M. Bamberger proposes then to commence by giving an emetic dose of the sulphate of copper, and afterwards a weak solution of the same salt. If vomiting continues, this solution should be replaced by the carbonate of copper in doses of from 3 to 6 grains in a little water, frequently repeated at first, and subsequently less often. Each dose should be preceded by a tablespoonful of vinegar, and in the interval ice should be given to check vomiting, and to diminish as much as possible the vaporization of the phosphorus. After following this plan for several hours, a new emetic dose of sulphate of copper may be given to rid the stomach of what remains of the poison. (*Gazette Hebdomadaire.*)

SALINE INJECTIONS AND OXYGEN IN CHOLERA.

(E. Littré.)

I have a new treatment to propose for trial in epidemic cholera. For a long time I have vacillated between the fear of adding another worthless novelty to the already long list, and that of failing to give publicity to an idea which may be able to render great service.

If I were a practitioner, I should have experimented before publishing my views, but, being a physician only theoretically, I am forced to the converse.

Dr. Colson has just revived the use of the saline injections into the veins.* This method, first employed by English physicians in 1831, was suggested by the analysis of the blood of cholera patients, which showed that it was wanting in serum and some of the salts necessary to its normal constitution.

The usual injection was composed of 5 pints of water, containing 90 grains of common salt, and 30 grains of carbonate of soda.

* Instead of these, I think the serum of calf's blood offers more chance of success; it should be received in a clean vase, surrounded with ice. As soon as coagulation takes place, the serum is decanted, heated on a salt-bath to 100.4° Fahrenheit, and injected by means of a proper apparatus. The serum should be fresh and clean, and should not be warmer than the temperature designated, so as not to endanger coagulation of the blood. M. Lorrain has reported (*Comptes Rendues*) a case of successful injection of pure water.

In the "Gazette Médicale de Paris," of which I was then one of the collaborators, I published (1832, p. 650 and p. 670) a *résumé* of all that was known relative to saline injections.

I said (page 672): "In running over the reports of cases, it is to be remarked that the first effect of saline injections is constantly to reanimate the circulation and pulse, and to restore the patient from a state of asphyxia which threatens speedy dissolution. . . . It appears that, of all the means hitherto employed in cholera, they are the most energetic in putting an end to collapse; they always succeed, at least temporarily. It cannot be denied that this is a precious property, for we have no other remedy of which as much can be said—even the most energetic of them are of little efficacy." These long-known results agree exactly with those lately obtained by Dr. Colson; he also has seen saline injections revivify (that is the word) patients who had neither pulse nor warmth.

Unfortunately, in most instances, this reaction is only temporary; the collapse returns, and the patient dies. Although this treatment, which has only been adopted in the gravest cases, has met with some success, still this has not been sufficient to cause it to be generally received.

In addition to saline injections, there is another temporary restorative from the collapse of cholera, though a less powerful one—this is oxygen. Inhaled, either pure or mingled with three parts of atmospheric air, it instantly produces an agreeable sensation. It was tried in 1832. (*Gazette Médicale*, 1832, page 173.)

These are the two restorative agents which, if I had charge of cholera patients, I should use, not separately but conjointly.

After the disease, non-responsive to the usual measures, had passed to the algid stage, and when the pulse became indistinct, and danger was imminent, I would use the saline injections, and at the same time administer oxygen in large quantities by inhalation. (*Gaz. Méd.*)

FORMULA FOR AN ALKALINE INJECTION, TO BE THROWN
INTO THE VEINS IN THE LAST STAGE OF CHOLERA.

(Colson de Beauvais.)

R. Distilled Water,	. . . .	80 drachms.
Chloride of Sodium,	. . . .	8 "
Lactate of Soda,	. . . .	2 "
Phosphate of Soda,	. . . .	45 grains.
Mix, and dissolve.		

The solution should be heated to 104° Fahr., and injected into the basilic vein of the arm, by means of a hydrocele syringe.

TREATMENT OF HEMORRHOIDS. (Gosselin.)

In the interesting papers which M. Gosselin has just published, he gives the following mode of treatment for internal hemorrhoids, which are distressing on account of the loss of blood, and the pain they cause at the moment of defecation.

If there is only one excoriated tumor internally, it yields readily to the application of nitric acid by means of a hair pencil. If there are two or three,

still small, they may also be removed by a single application of the acid. If there are multiple hemorrhoids forming a moderately large mass after stool, they may be removed by from four to six applications, and the patient will not be prevented from resuming his occupation in the interval, unless he be too much exhausted, or anæmic; the cure will be thorough, leaving perhaps only an indolent prolapse, which lasts but a short time, or it may be, a few painless tumors.

As for those very large tumors formed by five or six hemorrhoids, each larger than an ordinary filbert, we cannot always be sure of success with nitric acid. Probably, with some patients, this remedy will have to be laid aside after ten or twelve cauterizations, in which event I prefer the red-hot iron to the ecraseur.

What should be done in case of painful, strangulated internal hemorrhoids?

We may choose between a medical, or expectant, and a surgical treatment.

Under medical treatment, M. Gosselin includes the use of all sedatives or palliatives capable of relieving pain, and of enabling the patient to bear more easily the disagreeable period preceding the cure. This is undoubtedly the best mode of procedure in those cases where all, or almost all, of the hemorrhoidal mass participates in the gangrene consequent upon strangulation. Direct intervention M. Gosselin admits only where a certain number of hemorrhoids, having escaped sphacelus, might extend the accident.

What should then be the surgical treatment?

It should consist in cauterizing with nitric acid, even during the crisis, those parts which are not gangrenous. The pain is increased only for a short time by this process, which it will not be necessary to repeat; and thus imitating the means which nature adopts to produce a cure, the surgeon places his patient in a condition to be, with more certainty, permanently relieved of his hemorrhoidal trouble.

In cases of this kind, Blandin and, after him, M. Demarquay, had proposed to divide the sphincter subcutaneously. M. Gosselin has never adopted this operation, though he believes that it would have the effect of diminishing suffering; but, on the other hand, it would not afford entire relief, and might offer some obstacle to the formation of eschars, which bring about the cure.

It is better in such cases, strangulation being once established, to leave the patient the benefit of it, and to add to this, even, the effects of cauterization when the strangulation does not appear to be sufficient to complete the cure.

As to crushing and excision, M. Gosselin rejects them more than ever in these conditions, because, without affording any benefit, they may give rise to purulent infection, which never follows a spontaneous gangrene of the tumor.

MAISONNEUVE ON THE DRESSING OF WOUNDS.

M. Maisonneuve has entirely abandoned the use of cerate in dressing wounds. He uses exclusively

pledgets of lint saturated with a solution containing one per cent. of carbolic acid, aromatic wine or tincture of arnica, according to the degree of stimulation he wishes to produce in the part.

In cold abscesses and in affections of the bones, M. Maisonneuve, in common with many surgeons, extols highly Villate's liquor (see page 146. *TRANS.*), either applied on lint or in injections. (*Gaz. des Hop.*)

THE USE OF THE CUPPING-GLASS IN THE TREATMENT OF ANTHRAX.

The following is the treatment which M. Foucher adopted in the case of an anthrax as large as an egg, situated in the left dorsal region, on a level with the spine of the scapula.

He procured a cupping-glass of an inch and a half or two inches in diameter, and adapting the pump to it, he placed it over the carbuncle and exhausted the air. The cup filled quickly with sanious pus and shreds of tissue; he left it on for some moments, when upon taking it away the pain disappeared, and the tumor was emptied of its contents.

He applied the cup three successive days; each time all organic detritus was removed from the tumor, and the third time the integument over the part came away, leaving a healthy exposed surface, perfectly clean, and commencing to be covered with fleshy granulations. The borders of the wound were irregular, sharp, and elevated; suppuration was normal.

The dressing consisted of poultices, and the wound proceeded to a speedy cure.

**MALIGNANT PUSTULE; CONCLUSIONS OF THE MEMOIR
OF M. MAUVESIN.**

I have already spoken of malignant pustule (page 125), in regard to its treatment with cinchona. The following are M. Mauvesin's conclusions:

1st. Malignant pustule is primarily a local affection. 2d. Destruction of the pustule before the appearance of constitutional symptoms prevents these. 3d. The morbid action, primarily localized, becomes general, not only mechanically and by the entrance of the poison into the blood, but by a true evolution, the result of which is the creation of new centres (ganglia, spleen, &c.), and, finally, a carbonaceous dyscrasia. 4th. Malignant pustule is never developed spontaneously in the human subject.

**TREATMENT OF GRANULAR CONJUNCTIVITIS.
(Foucher.)**

The therapeutic indications which regulate the treatment of this affection are as follows: To make the granulations disappear, either by favoring their absorption, or by modifying the conjunctiva, and substituting for it a cicatricial surface; the first only should be adopted.

In the acute form, in addition to scarifications, which ought to be numerous and superficial, recourse should be had to nitrate of silver, either in solution or in the solid stick (Couserant); whichever of the two be used, the surface of the conjunctiva should be immediately washed with a solution of chloride

of sodium, to limit the caustic action of the nitrate of silver.

In all cases of chronic conjunctivitis, cauterization with nitrate of silver or sulphate of copper is painful, and should be made only every two or three days. They may be replaced by the glycerole of starch containing sulphate of copper, according to Græfe's formula:

R. Sulphate of Copper,	1½ to 2½ grains.
Glycerole of Starch,	75 grains.
M.	

M. Foucher recommends the use of pencils of glycerole of tannin, with which he has obtained the best results. Cauterizing with chromic acid, as recommended by M. Hairion, should be conducted with the greatest prudence; they are powerful and may be dangerous. M. Foucher does not say what value he places upon the neutral acetate of lead, from which the Belgian ophthalmologists, Ruys, Testelin, Warlomont, are said to have had the best results.

With regard to excision of the conjunctiva, it ought to be formally condemned: it succeeds very rarely, and the disagreeable cicatrix resulting from it may produce trichiasis, entropion, and obliteration of the puncta lacrymalia. (*Gaz. Médicale.*)

THE PREPARATION OF PERMANGANATE OF POTASSA. (Graeger.)

The author obtains this salt in a state of purity by using, instead of the ordinary manganese, the oxide of manganese, prepared by calcining the car-

bonate; this is easily obtained as an accessory product in the manufacture of chlorine, by precipitating the hydrochloric liquors with carbonate of soda, and subsequently separating the precipitates. One hundred and thirty parts of oxide of manganese thus prepared are precipitated with one hundred parts of chlorate of potassa and one hundred and eighty-four parts of hydrate of potassa containing as little carbonate as possible.

A solution containing 10 per cent. of permanganate of potassa has been highly extolled in cholera by Merletta.

TREATMENT OF BLENNORRHOEA BY THE INSUFFLATION OF POWDERS.

The difficulty of curing blennorrhœa, says M. Mallez, depends simply upon the fact that the point of the urethra where the disease has become localized escapes, on account of the form of the canal, the action of the remedy; therefore, the last drop of pus always has a tendency to reproduce the disease. The object then is to dissipate the last evidence of any secretion.

Applications made with catheters, simple or medicated bougies, ointments, and injections of glycerine and bismuth (which best fill the canal), answer to a certain extent; but covering the entire surface of the urethra with a layer of powder more or less thick seems to fulfil the object exactly.

The instrument which I use is very simple, and was made by Robert & Collin; it is composed, 1st, of an India-rubber ball provided with a metallic nozzle;

2d. Of a catheter (Nos. 7, 8, 9) furnished with a pipe and reservoir, which slips into the nozzle; 3d. Of a catheter (Nos. 15, 17, 19, Charrière's gauge) open at both ends. The largest catheter is introduced as far as beyond the membranous portion of the urethra; the small catheter is then slipped into this, after having placed the powder in the pipe and attached the pipe to the nozzle of the ball. The ball should be gently pressed in withdrawing the instrument slowly, guarding the air-hole with the finger, and the powder is deposited the entire length of the canal. Every point is thus covered, and the operation, performed with care, is in no wise painful. The patient should urinate before the operation, and the powder may be left in the urethra two or three hours.

In twelve cases cured by this method, the previous duration of the disease in five was, respectively, three, two, four, four, and two years.

So far, the author has used the subnitrate of bismuth, but he is experimenting with other substances, particularly the phosphate of magnesia, which Dr. Calvo uses in injections.

This instrument may be used for the vagina, the cavity of the uterus, and for all fistulous tracks.

SUPPOSITORIES AND PESSARIES. (Simpson.)

Extract of Belladonna,	4 grains.
Mercurial Ointment,	5½ "
Powdered Galls, 5 grains, and Opium,	1 "
Acetate of Lead, 5 grains, and Opium,	1 "
Aloin,	1 "
Powdered Soap,	5 "
Gamboge,	5 "
Santonin,	5 "

The above represent different substances and their dose for a suppository.

For pessaries, the doses are as follows:

Oxide of Zinc,	13 grains.
Acetate of Lead,	6½ "
Mercurial Ointment,	30 "
Iodide of Lead,	5 "
Tannin,	10 "
Alum, }	13 "
Cashoo, }	
Extract of Belladonna,	10 "

Mr. Simpson uses a large number of other remedies, such as borax, carbolate of lime, carbonate of soda, dried sulphate of zinc, perchloride of iron, bromide of potassium, &c. (*Gaz. Hebdom.*)

SOLUTION OF CARBOLIC ACID AND CAMPHOR. (Marietta.)

Rectified Spirits,	1 pint.
Glacial Acetic Acid,	6 drachms.
Camphor,	12 "
Carbolic Acid,	1½ "

Mix and dissolve.

For aspersion and inhalation in cholera.

GRAVEL.—URINARY CALCULI.—GOUT.

*Polymuria, Oxaluria, Cysturia, Phosphopostasis.*ETIOLOGY, PROPHYLAXIS, AND THERAPEUTIC
HYGIENE. (A. Bouchardat.)

Gravel and urinary calculi are not rare affections. Careful observation proves that they are more common in some countries than in others.

They affect every age and every class of society. Formerly they were much more formidable than at present, thanks to that admirable surgical conquest—lithotripsy. I am confident that in a measure as light is thrown upon their causes, and when their first symptoms become generally understood, these diseases will be less and less dangerous, and may easily be avoided through the efficacy which chemistry and physiology have given to their prophylactic, hygienic and therapeutic management.

I propose to publish at present some ideas upon the etiology, prophylaxis, and therapeutic hygiene of gravel and urinary calculi. They consist mainly of extracts from my lectures delivered in the regular course. I shall only brush over this immense subject, but I know so well that I would not be able to enter into a thorough examination of it, that I shall not take the trouble to give a general outline, which, to be developed, would suffice to occupy a whole life of research. What follows, has for its basis my reflec-

tions upon, and study of, the subject during a period of thirty years, and also numerous cases which I have collected from a large number coming under my observation.

Limited in space, and by the extent of the questions (which I only touch upon), I have not been able to give due credit to all the authors to whom I am indebted. Let them accept my apologies; the omissions shall be repaired, as far as I am able, when I take up in detail the various subjects which are here considered conjointly.

The history of gravel comprehends a series of the most distinct affections, which it is absolutely necessary to separate if we wish to avoid deplorable confusions; and it would be to ignore the range of the subject to limit the name of gravel or calculus to collections which form in the kidneys or bladder. It is, therefore, essential to pursue the study of these abnormal deposits throughout the entire economy. Thus we may be able to arrive at a rational interpretation of several of the most serious morbid states.

It is evident that oxalate of lime, the ammoniaco-magnesian phosphate, and the urates, which are produced in the body, are not deposited only in the kidneys and bladder. Let us admit for an instant (and the hypothesis is entirely in conformity with facts) that these substances are produced, at a given moment, in too large quantities in the circulation; do we not perceive here the origin of certain forms of emboli which give rise to formidable accidents? And may we not thus explain in an intelligible manner those partial arrests of circulation which lead to such se-

rious complications? Let it suffice, therefore, for us to say that death is often due to embolism, and sanious or serous effusion into the brain, in those patients who are evidently under the influence of deposits in the bloodvessels, of oxalate of lime, ammoniaco-magnesian phosphate, or of urates.*

* I was the first to show in a very clear manner (*Annales d'Hygiène Publique et de Médecine Légale*, t. xvii, p. 362) that sulphuric acid is absorbed by the stomach, and forms, in the blood, clots which interfere with the circulation. In one case (22d April, 1833) the femoral arteries were filled with black blood of the consistence of jelly; there existed in the left femoral a clot which completely obstructed its canal, a fact that can be attested by C. Couriard. A second case was reported Oct. 6th, 1835. In this instance, the heart contained about 100 grammes of blood-clot of a similar consistence. The aorta was almost entirely filled with gelatinous clots. The femoral artery of the right side was completely obliterated by a continuous clot, black and quite consistent.

Death through arrest of the circulation by clots or other foreign bodies may take place under widely different circumstances. And any substance which induces coagulation, as sulphuric acid, fibrine, the pathological products of cancer and tubercle, may produce analogous effects. The insoluble compounds which are most commonly formed in the blood are, urate of soda, oxalate of lime, ammoniaco-magnesian phosphate, cholesterine, &c. These are rarely found isolated in deposits. In the smallest vessels of the liver and brain they serve as nuclei for fatty substances whose position is less elevated than that of the fatty matters of the blood. Hitherto, anatomists have not noticed these fatty substances without taking cognizance of the insoluble body which is the true cause of the deposit. Our attention is attracted to this research, which will be of valuable result.

GENERAL CONSIDERATIONS ON GRAVEL AND CALCULI.

I begin now with the study of gravel and gravel stones in general, and shall subsequently take up the etiological, prophylactic, therapeutic, and hygienic history of the three principal affections confounded under the names of gravel and calculus.

I introduce here a very limited list of illustrious personages who have suffered from stone. In it we find represented all classes of society; the most skillful physicians have been among its victims, as of many other diseases.

Jacques Amyot; Michel Montaigne; Barthez Paul; de Beaumont, Archbishop of Paris, who was operated upon and relieved by Frère Côme; Jean Calvin; Bossuet; Buffon; Fagon, physician to Louis XIV; Colbert (of whom the wits of his times said he had the philosopher's stone); George IV, King of England; Benjamin Franklin; Dubois, minister of the Regent; Antoine Dubois (relieved by lithotrity); Désaugiers (one of the first operated upon by lithotrity; he sang during the operation); Nysten; and, finally, Halle, my illustrious predecessor.

Many chemists, surgeons and physicians have written upon gravel and urinary calculi, for the purpose of fixing their composition, and to determine the various conditions of their formation, or to find the means of relieving those affected with these annoying products.

Among them I should place in the front rank, is Scheele, who discovered uric acid; Vauquelin and Berzelius, who have made a profound study

of urinary concretions; W. Prout; Magendie; and others. I should not forget, and I gladly mention, M. Civiale, whose name is pre-eminent in connection with the discovery of lithotritry. Among the monographs that I have read with profit, that of Dr. Bigelow should be cited. Moreover, for many years past, having been consulted by numerous patients through my pupils, I myself have studied clinically the conditions of the formation of gravel, the means of combating the predisposition and the evil itself, when it exists. On several occasions I have given, in my lectures, the results of my studies upon the subject; here is the order that I follow:

1st. Enumeration of substances found in gravels; 2d. Signs of gravel and calculus; 3d. General causes; 4th. Classification (from the hygienic conditions, the age, and composition of the deposit); 5th. Special study of each group.

1ST. SUBSTANCES FOUND IN CALCULI AND GRAVEL.

Uric Acid.	Phosphate of Lime.
Urate of Ammonia.	" " Magnesia.
" " Soda.	" " Iron.
" " Potassa.	Mucus—Nitrogenous substances—Altered blood—Coloring matters.
" " Lime.	Silica—Mica—Oxide of Iron and other foreign bodies.
" " Magnesia.	Urea; Benzoate of Ammonia.
Xanthic Oxide.	Oxalate of Ammonia.
Cystine.	Muriate of Ammonia.
Oxalate of Lime.	Other immediate urinary principles.
Carbonate of Lime.	
" " Magnesia.	
Ammoniaco-magnesian Phosphate.	

A single proximate principle is never found in a calculus; all calculi have a more or less complex composition. Often the nucleus differs in nature from the peripheral layers; the substance which predominates generally determines the name of the calculus. This predominating substance is always associated, in those stones which have acquired a certain volume, with condensed mucus, epithelial cells, and often with materials of altered blood.

The distinction between gravel and calculus is without importance with respect to the conditions of formation, it being the size alone which establishes a difference. When the concretion is too large and compact to be voided through the urethra, without operation, it is called a calculus.

The difference between gravel and deposits from the urine, on the contrary, is of great importance. At some period or other, under various influences, every individual passes urine, which, by cooling, especially in winter, yields a deposit; this I call dust (*poussière*) of urine. It is not gravel, and, at the most, is only an index that the person is threatened with gravel, when the deposit is habitual and abundant. Gravel itself is clearly characterized by the emission with the urine of small hard bodies, which sometimes irritate the canal in passing, and of which the evacuation is for several days preceded by nephritic colic.

A careful examination of urine, will give a good idea, as regards the probability of the existence of gravel or stones in the kidneys or bladder.

As I have said, we may always be suspicious when the urine deposits habitually an increased quantity of uric acid, or of oxalate of lime.

Ammoniacal urine is almost certain evidence of disease of the bladder; under this condition, there is always a deposit in the bladder of ammoniaco-magnesian phosphates, of phosphate and of carbonate of lime. If these deposits agglutinate, we have a gravel or stone formed.

A persistent high specific gravity of urine (setting aside the presence of glucose), of 1025 to 1030, instead of 1020, is an early sign to which I attach much importance. This symptom coincides with a diminution in the quantity of urine passed in twenty-four hours, which may not amount to two pints for that period. If with this there is observed in the urine a deposit of red or altered blood, the unfortunate probabilities increase. Red blood is recognized by a rosy tint, and altered blood by the dark color it gives to urine. When the blood is small in quantity, the urine should be allowed to repose for twenty-four hours, when the blood-globules or altered blood will have settled down to the bottom of the test-tube, and may be recognized by the naked eye or by the microscope.

If, at the same time, the urine habitually contains a great excess of mucus, the chances of the existence of gravel or calculus are singularly multiplied.

If the patient experiences an increase in loss of blood and mucus, after riding in a jolting vehicle, accompanied by an aggravation of pain in the kidneys or bladder, the existence of gravel or stone

may almost be affirmed. In interrogating the patient, he tells you that he has often experienced nephritic colic, and from time to time complains of pain referable to the prepuce. Under these conditions a careful exploration and regular treatment are indispensable.

Here is how I proceed. After determining the nature of the concretion, I institute a hygienic treatment, based upon its nature. If, in two weeks, there be no marked improvement, I advise an examination of the bladder by a skilful hand. If the treatment has been successful, it is continued, and the sound is not brought into requisition.

Before entering upon the general study of the causes of gravel and calculi, I must call attention to these three tables showing their composition.

COMPOSITION OF CALCULI, DEDUCED FROM 1000 ANALYSES.

Oxalate of Lime,	142
Uric Acid, pure or mixed with Urates, Phosphates or Oxalates of Lime,	372
Phosphatic Calculi,	253
Calculi with alternating layers,	233

COMPOSITION OF NUCLEI. (Bigelow.)

Uric Acid,	8
Uric Acid and Urate of Ammonia,	12
Urate of Ammonia,	4
Urate of Ammonia and Magnesia,	6
Double Phosphate of Magnesia,	6
Urate of Magnesia,	3
Carbonate of Lime with traces of Phosphates,	2
Double Phosphate with traces of Lime,	6
Oxalate of Lime,	6
Oxalate of Lime with Urates and Phosphates,	37

Phosphates of Lime with traces of Double	
Phosphate,	3
Foreign bodies,	13
	<hr/>
	100*

Résumé.

Uric Acid, Urates,	33
Oxalate of Lime,	43
Phosphates, Carbonates,	11
Foreign Bodies,	13
	<hr/>
	100

We see that the question of nuclei is of great importance, especially from an etiological point of view.

GENERAL CAUSES OF GRAVEL AND STONE.

These may be referred to four principal heads: 1st, accidental nuclei; 2d, use of certain kinds of food; 3d, too great concentration or alteration of the urine; 4th, irritation of the kidney. We shall pass each of these successively in rapid review.

1st. *Accidental nuclei*.—In very many cases there have been found in the centre of urinary calculi, extracted by cutting into the bladder, foreign bodies, such as fragments of sounds, pins, &c. These foreign substances have evidently served as nuclei for concretions, after having determined, by the irritation they give rise to, the secretion of an abnormal amount of mucus from the bladder.

* The mistake is in the original; evidently it is among the phosphates.—TRANSLATOR.

2d. *Use of certain kinds of food.*—Certain substances taken into the stomach may determine the formation of calculi in the bladder, by giving rise to such slightly soluble deposits as oxalate of lime, uric acid or urates, &c. Other substances, likewise ingested, may create a renal irritation, whence comes an abundant secretion of vesical mucus, which, as we shall see, may itself be the cause of calculi.

3d. *Too great concentration or alteration of the urine.*—When the urine is in small quantity, on account of the insufficiency of watery drinks, the amount of uric acid or urates remaining unaltered, a portion of these may be deposited in the bladder; this is the grand cause of uric acid gravel. When the urine undergoes changes in the bladder and becomes alkaline, deposits of phosphates of lime and magnesia and of the triple phosphates may occur; this is the grand cause of phosphatic gravel.

We will return to the consideration of this.

4th. *Irritation of the kidneys* (catarrh of the mucous membrane of the calyces, pelvis, or ureters).—Cro-zant, former physician of the Eaux de Pougues, attributed a great importance to this cause; but we must determine the various influences which may give rise to such irritation. These are numerous, and it is important to search them out, for it is only in determining them exactly that we may hope to attain the basis of a sure prophylaxis and of a rational treatment. We should also recollect that irritation is most often rather the effect than the cause of gravel.

Irritation of the kidneys may be due to the pres-

ence of foreign bodies, which give rise to pain in those regions; to an accidental presence of blood or an excess of mucus in the urine; or to the existence of albuminuria. The foreign substance most often found in the kidneys is oxalate of lime, in the form of sharp plates (to these we shall return); next comes, in point of frequency, uric acid, or rather its combinations.

The means I usually adopt to dissolve or remove these foreign bodies from the kidneys are copious watery draughts containing calcareous (Contrexéville, Evian) or benzoic substances (7½ grains of benzoic acid to 1 pint of water).

Quite a frequent cause of renal irritation is the excretion of urine of which the specific gravity is too high, say constantly above 1020. The remedy for this condition consists in copious draughts, to reduce the specific gravity to 1017. These draughts may be of either good drinking water, decoctions of cherry stalks, fine dog's grass, or flaxseed, &c.

The urine of some persons is alternately of high and of low density; the dense urine causes irritation in their kidneys already so predisposed. The only remedy is in a regulation of the ingestion of watery fluids; instead of taking them at meal-times, it is important that the quantity allowed be so divided as to be taken six or eight times during the day.

When the urine is habitually charged with an excess of slightly soluble materials, such as oxalate of lime and uric acid, this excess must be made to disappear by measures upon which we shall dwell farther on, but which we may sum up thus: in every

case an abundance of water is to be taken; if the deposit is uric acid, frequent gymnastic exercises; if oxalate of lime, abstinence from sorrel and tomatoes.

Certain substances ingested with the food, or absorbed by the lungs, give rise to renal irritation, and their action, long continued, may become a determining cause of the affections with which we are occupied.

We may mention oil of turpentine; the balsams; almost all poisons, particularly phosphates; cantharides; arsenical or saturnine preparations. Among aliments is asparagus, the protracted use of which determines, in certain individuals, a manifest irritation of the kidneys.

When we can go back to any of the causes which have been indicated, the most important procedure is to remove them.

Several inoffensive substances, when eliminated in too large quantity by the kidneys, normally or pathologically, may be the cause of irritation of these organs.

Among these are common salt, glucose, and other proximate principles, which are eliminated through this channel. The hygienic treatment consists in restoring to the excretion a physiological proportion of its ingredients.

In certain conditions, renal irritation is a consequence upon a modification of the action of the skin, resulting from cold or from imperfect function of this organ.

The latter is a more frequent cause than generally supposed, and the indication is to restore the intimate

relationship between the kidneys and skin, by exciting this latter to healthy elimination. Exercise, and above all that of the gymnasium, energetic frictions, and the divers processes employed in hydropathy, are the hygienic measures to which regular and intelligent recourse should be had.

CLASSIFICATION.

Several modes of classifying calculi have been proposed, depending upon the end to be attained. These are, first, a chemical classification; next, a classification based upon the social position of those suffering with calculous diseases; and finally, a classification according to the age of the patient.

I. *Chemical classification*.—In this, the calculi are divided into combustibles, or organic, which leave little residue when burnt, and which are almost chemically pure, as, for example, the calculi of uric acid and cystine; into non-combustible calculi, as the earthy phosphates, earthy carbonates, silica; and, finally, into mixed calculi, which consist of oxalate of lime, and which also include those whose composition is very complex, and which are formed of two or more substances. This classification would be of little use from our point of view if we should follow it rigorously, but we shall arrive, in another way, at several subdivisions based upon chemical composition.

II. *Classification based upon social status*.—Here the influence of social habits predominate, having reference particularly to alimentation and manual labor.

1st. Among the peasantry, *oxalate of lime* calculi are observed.

2d. Among the wealthy, inhabiting cities, and given to good cheer and leisure, *uric acid* calculi predominate.

3d. Among those, rich or poor, who indulge in venereal pleasures, as observed principally in cities, *calculi of earthy phosphates* are most often found. In these, diseases of the urinary passages are most frequent, having as a consequence collections of triple phosphates.

III. *A classification may be made according to ages.*—The following figures have reference to the age in relation to its connection with the existence of stone.

In 5376 calculi, there existed, in persons aged,

From 1 to 10 years,	1946
“ 10 “ 20	943
“ 20 “ 30	460
“ 30 “ 40	330
“ 40 “ 50	391
“ 50 “ 60	513
“ 60 “ 70	577
“ 70 “ 80	199
Above 80	17
	<hr/> 5376

The diminution of calculous affections for persons above seventy is evidently attributable to the diminished number of persons attaining this age. For inverse reasons, an increase is observed for the years of infancy and childhood.

The nature of calculi varies with the age of the subjects.

1st. In infancy and childhood, *oxalate of lime*, some-

times associated with a carbonate of the same base, predominates;

2d. In the adult, calculi of uric acid and the urates are the most frequently met with;

3d. In old age, earthy phosphates and earthy carbonates are observed. That is, in old age, the urinary passages are often diseased, which favors the formation of this last group of calculi.

This then is the order to which I shall hold, and which is well suited in regard to the etiology, prophylaxis and treatment of calculous affections, gravel, and their secondary complications.

The diseases connected with gravel and stone I divide into four groups, each one of which I shall successively study.

First group.—Uric acid and urate group. A uric acid diathesis is that constitutional condition under the influence of which there is produced in the economy more uric acid than under the normal conditions of health. This I call *polyuria*,* or a *polyuric affection*.

The polyuric affection is the calculous disease of adults.

I prefer the appellation *polyuria* or *polyuric affection* to that of *diathesis*, since the words have not the same signification.

* The original is *polyurique*; it must not be forgotten that the English word used here is sometimes employed synonymously with diuresis, but not being a good expression for this, I venture to offer it as a suitable translation for the French word, which, indeed, is itself not yet in general acceptance.—TRANSLATOR.

A diathesis cannot be completely changed, but, at the most, modified in intensity; whilst an affection is alterable under certain conditions. The polyuric affection is to a much greater degree dependent upon hygienic measures than upon the special condition of any organs; it may be alleviated from day to day, and may be produced or corrected by alimentation and exercise.

Second group.—Production of cystine. This affection, as will be seen, is rare; it seems to be connected with some disease of the liver.

Third group.—Is a very important one. It is that of *oxalate of lime*, which predominates in children, and in inhabitants of the country.

Fourth group.—This comprises those *phosphatic deposits* which are met with in the bladders of certain old men, and of persons affected with disease of the urinary passages, the prostate and the urethra; and also of those who have over-indulged in venereal pleasures.

Still other groups might be established, but they would be useless for the practical object I now pursue. We may, therefore, be contented with the four preceding ones, and may even leave out the second one of these (that of cystine), which is very rare.

Before finishing, let us recognize that it is a grand error to speak of gravel as a unique disease. It embraces affections, which, with respect to causation and treatment, differ widely. To endeavor to make of them one disease, having one prophylaxis and treatment, would be to open the door to a deplorable confusion. I recognize, therefore, four principal

diseases: *polyuria*, *oxaluria*, *cystinuria*, and *phosphorostasis*.

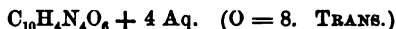
POLYURIA.

Polyuric affection.—This group, which formerly, in common with most authors, I called *uric acid diathesis*, is the one which I shall first take up. Polyuric affection is, if not the cause, at least one of the most formidable complications of gout, in which it plays a most important rôle. It may be admitted, and with great probability of truth, that this excess of production and insufficient elimination of uric acid are the veritable characteristic of gout.

Uric acid, as I have said, constitutes the calculus of adults, residents in cities, and rich people. According to the statistics of M. Ségalas, 79 per cent. of all uric acid calculi, are furnished by the inhabitants of cities.

When I say uric acid, I use the word to designate the group which, in its entirety, comprises uric acid, urate of soda, bi-urate of soda, urate of potassa, of lime, and of magnesia. I willingly admit that uric acid is much more frequently found in the organism in combination with alkalies or earthy bases than in a free state.

Scheele, who discovered uric acid, called it *lithic acid*. The formula is:



It exists in the blood as urate of soda, lime, and magnesia. It is combustible.

Properties of uric acid.—When burnt in a closed

tube, it gives empyreumatic and ammoniacal vapors, and urea.

Water dissolves only one part in 1500 or 1700, by weight; it is more soluble in hot than cold water, and, for this reason, is often deposited from urine which has become cold.

The alkaline urates are likewise more soluble in warm than in cold menstrua, and they constitute the usual deposits in urine. They are more soluble than uric acid.

Uric acid is dissolved quite easily by the aid of heat, particularly if the liquid be rendered alkaline by soda or potassa; and if to such a solution acetic acid is added, a white precipitate of uric acid takes place.

Uric acid, carefully heated in a glass tube with nitric acid, and then submitted to the vapor of ammonia, gives a characteristic red color.

Microscopic characters.—If the red uric acid deposit from urine be examined under the microscope, and a little acid of some kind be added, it assumes the form of regular rhombohedra, or of lamellated crystalline rhomboids.

Urinary deposits present generally a more or less deep red color, like brickdust.

Pure uric acid appears in white, colorless lamellæ; the color of *red gravel* is not in any wise due to the uric acid, but to coloring matters in the urine, which, attracted by the uric acid, combine with it and are precipitated.

The coloring matters in the urine are present most frequently, and most abundantly, in certain cases of

fever. The red uric acid was formerly called *purpuric* (rosacique) acid.

Conditions of formation of uric acid.—A considerable influence upon its formation is exercised by diet. It is found in the urine of man, the carnivora, omnivora, and in the urinary deposits of certain animals. It is also met with in the urine of young infants, and of young calves. It exists likewise in the urine of cows fed upon grain, or restricted in food; but if grasses and herbs alone be given, no uric acid is formed. Under these circumstances another substance is found, which, by combining with the uric acid, gives rise to *hippuric* acid. We shall return to a consideration of this interesting transformation.

THE QUANTITY OF URIC ACID EXCRETED IN TWENTY-FOUR HOURS.

Whilst the proportion of urea is about constant for each individual, uric acid, on the contrary, is subject to considerable variations, both for the same or different persons. Thus, from day to day, the quantity of uric acid may rise from three grains to twenty-two grains, or even more, in twenty-four hours. Seven and one-half grains may be assumed as the average of these variations, under the usual normal conditions of health, diet, and exercise. Such has been the experience of Professor Lecanu, whom we may always cite upon the chemistry and physiology of the urine.

CAUSES OF INCREMENT OR DECREMENT IN THE
PRODUCTION OF URIC ACID.

There is a diminution of uric acid in chloro-anæmia.

It is found in excess, on the contrary, under the influence of: 1st. A special regimen; 2d. Want of exercise, or inertia; 3d. Defective respiration; 4th. Certain diseases of the liver and digestive track (Mercier); 5th. Certain idiosyncrasies, as the rheumatic and gouty.

We shall revert to this in speaking of the causes of polyuria.

Causation.—The causes of polyuria may be ranged under four principal heads: *Alimentation, Inertia, Defective respiration, Disease of the digestive apparatus.*

I. *Alimentation.*—1st. The grand cause of polyuria lies in eating too much, or more than the functions of the economy require. Let us examine successively those substances which are most hurtful. The influence of animal diet upon the production of uric acid is evident; individuals who eat more meat than they require, excrete an excess of uric acid; and there can be no doubt that this exaggerated animal diet is deleterious, but it is an error to attribute to it a predominating influence. According to Lehmann, an exclusive animal diet would give 22 grains of uric acid, a mixed diet 17 grains, and an exclusively vegetable diet $15\frac{1}{2}$ grains.

2d. Alcoholic liquors are much more dangerous agents, with respect to the production of uric acid.

Excess of wines, liquors and brandy should, therefore, be carefully avoided.

3d. Sparkling wines are, above all, to be shunned by persons affected with polyuria. Under their influence uric acid deposits increase in the urine. Every one may make this observation; let the urine which is passed in the morning after a banquet, or after much champagne has been taken, be examined, and a deposit of uric acid will almost certainly be found.

4th. With alcoholic liquors, may be classed, fatty substances, which, taken in too large quantity, favor, eventually, the production of uric acid in excess. The excess is much more rapidly produced, however, under the influence of alcohol.

5th. Sugar in too large quantity has also an injurious effect. Indeed, it should not be forgotten that well-nourished diabetics pass a great deal of uric acid; and, moreover, polyuria very often follows upon diabetes. This result is more decided when the two already coexist, and when the diabetic eats too much.*

* I have hitherto pointed out the amount of uric acid eliminated in twenty-four hours by diabetic patients; and I have been astonished at the large quantity, which sometimes exceeds 31 grains: four times the normal quantity!

I have not often observed in them the usual complications of polyuria. Perhaps the cause of the sudden deaths in diabetes may be found in this excessive production of uric acid. I always advise well-regulated exercise, which causes the sugar to disappear, and reduces the formation of the uric acid to the normal amount.

6th. Finally, certain vegetable principles are regarded as causes; some authors attributing considerable influence to asparagus and green beans. These questions are still to be decided by careful observation.

II. *Inertia*, like excessive fatigue, that is, all badly regulated exercise, increases the amount of uric acid in the urine. But, certainly, bodily inactivity is particularly to be regarded as among the causes. This explains why the affection is so frequent in cities among those leading sedentary lives; so rare, on the contrary, among the active laborers of the country.

III. *Defective respiration*.—This includes any absolute deficiency of respiratory movement; vitiated, or an insufficient supply of, atmospheric air; all impediments to pulmonary function, as too great constriction of the chest, or slow and chronic pulmonary disorders; the heated air of restaurants and of large assemblies. Such, then, are the causes which favor the exaggerated production of uric acid.

IV. *Diseases of the digestive apparatus*: the liver (Aug. Mercier), stomach, pancreas; and every cause capable of interfering with digestion, such as the overabundant ingestion of food, or its bad quality or preparation. Among the dyspepsias to which we may legitimately attribute polyuria, may be mentioned in the first rank, the *dyspepsias of high livers* (*gourmands saturés*).

Certain general causes: phlegmasias, fevers, and vivid emotions, like sudden access of anger, may de-

termine a temporary polyuria, and even a transient glycosuria.

Lead poisoning, as several English physicians have remarked, and as M. Charcot has verified, may predispose to polyuria.

Certain diatheses, especially the rheumatic, likewise favor polyuria.

The conditions of the deposit of uric acid, either in a state of combination or free, are principally: *a*, insufficiency of cutaneous function; *b*, insufficiency of aqueous drinks; *c*, too abundant production of mucus in the kidneys and bladder; *d*, defective elimination by the kidneys. This last condition is observed in gouty patients whose blood and principal fluids are saturated with urates, which form tophaceous deposits. It might be thought that in these cases the disease did not consist in a too great production of uric acid, but solely in a precipitation of urates.

All the facts concur in demonstrating an exaggerated production, coincident with a defective elimination.

DISEASES DUE TO AN EXCESS OF URIC ACID.

1st. *Uric acid gravel*, which must be distinguished from simple deposits in the urine.

When simple grayish or rust-colored deposits are found in urine exposed to a cold temperature, they furnish evidence of a predisposition, and should not be wholly disregarded. So far, they are only impalpable urates, which should excite some mistrust if they are constantly reproduced. When a gravel is

heard to fall during the emission of urine, then true gravel certainly exists, and should be treated without delay and with perseverance.

2d. *Calculi*.—Uric acid calculi are hard, but, in an otherwise healthy bladder, the conditions are favorable for lithotrity.

It is through diet and a proper hygienic treatment that a recurrence may surely be prevented after the patient has been relieved. We propose to refer to the hygienic treatment in all of its details.

3d. *Gout and its Complications*. Attacks of gout are liable to occur under the influence of the polyuric affection. The smaller articulations become stiff, and other well-known phenomena ensue, of which I need only mention the principal: excessive pain, articular swelling, fever, tophaceous deposits, anchylosis, difficult locomotion, &c. Often likewise, under these circumstances, certain diseases of the heart are developed. We shall speak farther on of these complications, as well as of those dependent upon affections of the kidney and digestive apparatus. Finally, there are accidents, sudden and incomprehensible, deaths, unseen and almost immediate. Can there be, in such a case, a catalytic decomposition of the urates of the blood into oxalic acid and urea? I have observed in two patients during the crisis of fatal gout a considerable increase in the quantity of urea passed in twenty-four hours. Death in these cases may be due to embolism produced by the presence of an excess of oxalate of lime. And uric acid itself might cause this embolism. By either sup-

position may be easily explained those cases of sudden death so frequently observed in gouty patients, and of which we say that the gout was transferred to the heart, brain, &c. Observation will soon clear up this question, but already we comprehend the frequency of embolism in the gouty.

Distinction between Rheumatism and Gout.—Notwithstanding certain very important different characteristics between articular rheumatism and gout, we are still forced to recognize a striking analogy between the two diseases. The symptoms and the mode of development of the access in each are not without resemblance, but points of prime value differ in their etiology. Thus, the continued action of cold and a general impoverishment of the body favor the appearance of rheumatism, whilst gout seems to have its cause in epicurism and inactivity. In this case, there is an insufficiency in the combustion of the elements of calorification. Again, these diseases are approximated in being due to a common idiosyncrasy. In the laboring peasant, it produces rheumatism, and in the wealthy, who eat much and work little, it gives rise to gout.

Both diseases predispose to painful inflammations and swelling of joints; to cardiac complications; to that irregular and incomplete reaction which calls these affections into existence, under the influence of cold.

In rheumatics, there is an insufficiency of material appropriated to calorification.

In gouty subjects, there are abnormal deposits of

urates, principally urate of soda,* substances resulting from imperfect combustion of calorific material,

* *Tophaceous Deposits of Gout.*—The following excellent suggestions I take from M. Charcot (*Leçons sur les maladies des vieillards*, p. 49). “From the first attack, deposits of urate of soda form in the circumferential (diarthrodial) cartilage (Garrod, on Gout, p. 211. London, 1863). They occupy the most superficial portions, and are found in the cells or in their intervals, as M. Cornil and I have proven. They are generally situated about the centre of the free surface, as far as possible from the insertion of the synovial membrane, which, as is known, reaches no farther than to the periphery of the articular cartilage.

“You will easily understand the motive of this singular election. Those points accessible to the circulation are the least exposed to the formation of these deposits, which, by preference, occupy tissues not supplied with vessels. Now, synovial membrane and bone are eminently vascular structures; therefore gouty concretions form on the surface of cartilage, so as to be far removed from bone, and at the centre of the surface, to be distant from synovial membrane.

“At a more advanced period of the disease, when a chronic condition succeeds to the acute stage, the synovial membrane itself is attacked; and it is the appendices to the fringed margins of this membrane which suffer first, being less rich in vascular supply; later the membrane itself presents incrustations. It is in this case, in the epithelial cells, that the deposits form, according to Professor Rouget. In effect, the soft, whitish substance sometimes found in gouty articulations is only urate of soda proceeding from epithelial desquamation.

“We know, finally, that the ligaments themselves sometimes participate in this incrustation. But the pathological process does not stop here; it may go farther and invade parts external to the articulation; tendons and bursæ may become the seat of the disease; and when the concretions are developed in the neighboring cellular tissue they take the name of *tophus*. It

due to want of exercise and consequent insufficient respiration.

is known that they sometimes acquire considerable dimensions. But these extra-articular lesions, which correspond to a more advanced degree of saturation, are always consecutive upon an alteration of the circumferential cartilage, which alteration may exist alone, but is never wanting whenever the periphery of the articulation is affected. At least we know of no exception to this rule.

"Let us see what is the composition of the material which forms these deposits. Examined by the naked eye, it appears amorphous and resembles plaster of Paris; but, under the microscope, it seems to consist entirely of acicular crystals. It is true that sometimes there are found in the diseased cartilage scattered masses of amorphous matter; but Garrod pretends that with the aid of the polariscope these conglomerations may be shown to be of a crystalline structure.

"When acetic acid is added, rhombohedral crystals of uric acid are produced; and it is by means of this reagent that the presence of deposits in the cartilage cells may be demonstrated. But their chemical constitution may also be otherwise determined.

"If the affected cartilage be treated first by cold water, then by alcohol, and then by hot water, it becomes perfectly transparent, and the water and alcohol after evaporation will leave crystals of pure urate of soda.

"Indeed, these crystals, if incinerated, furnish carbonate of soda; and, treated by boiling nitric acid and then by ammonia, they yield purpurate of ammonia, or murexide, whose color is so characteristic.

"The concretions which form in the substance of the dermis itself offer, in a practical point of view, much of special interest.

"In the first rank may be mentioned those concretions in the external ear, pointed out by Ideler, Scudamore, and Professor Cruveilhier. Garrod has demonstrated everything possible in its clinical consideration.

A predisposition to inflammation, with painful swellings and cardiac complications, is common in gout and rheumatism. The points of difference are that in rheumatism there is a form of impoverishment of the economy, and in gout, there are deposits of urates, and the presence of uric acid in the blood.*

"These small concretions affect, in particular, the border of the helix, but may also occupy the anti-helix, or the internal surface of the meatus; they pass through three stages in their development: at first soft, they harden and form small whitish masses, and at length may fall, leaving behind them a small cicatrix, which may be discovered, although the tophus itself have disappeared.

"In thirty-seven cases, Garrod met with external tophi seventeen times; seven on the ear alone; eight both on the ear and in the neighborhood of joints; and only a single time about a joint without having coincident ones on the ear."

* *Excess of Uric Acid in the Blood in Cases of Gout.*—From the very interesting treatise of Dr. Charcot, on the diseases of old age (gout and rheumatism), I extract what relates to the presence of an excess of uric acid in the blood of gouty subjects. "Forbes, Murray and Holland, in England, Jahr, in Germany, Messrs. Rayer and Cruveilhier, in France, were among the first to express the opinion that gouty blood contained uric acid. But to Garrod (*Med.-Chir. Transactions*, 1848), belongs the honor of having furnished positive demonstration of it.

"Normally, there exists traces of uric acid in the blood; but during an attack of gout the blood may contain from $\frac{1}{10}$ to $\frac{1}{2}$ of a grain in 1000 grains. But to prove this proportion, resort must be had to very delicate chemical operations, which do not belong to the domain of clinical medicine. There is, however, a process, very simple and easy of application, which, without indicating precisely the quantity of uric acid in the

Still, both have a common basis, and we can understand how these two diseases were confounded by my preceptor, Chomel, and by my friend, Requin.

blood, permits of its presence being demonstrated. About five grammes of serum are placed in a large glass capsule (*verre de pendule*), (not in a watch-glass, since its curvature is too rapid), several drops of acetic acid are added, and a thread laid in the mixture. The whole is allowed to repose in a dry place for thirty-six or forty-eight hours, when, by aid of the microscope, rhombohedral crystals will be found covering the thread. These are uric acid.

"To obtain this result, certain precautions are necessary. The serum should be fresh, as the presence of albuminoid matters cause in it a kind of fermentation, decomposing the uric acid into oxalic acid, urea, and allantoin; a process similar to that which ensues under the influence of pure oxide of lead.

"The serum should not be too concentrated, for crystals of triple phosphate, in the form of very elegant vegetations, may be produced. But as this salt is very soluble, it would suffice to add a little water, when they will dissolve, and rhombohedral masses, composed entirely of uric acid, will appear.

"This process, which is not delicate enough to show the uric acid in normal proportions, answers very well for practical purposes, since it will reveal one *sixty-five thousandth* part of uric acid in blood (Garrod).

"When blood cannot conveniently be had, we may use the serum from a blister, which will give the same reactions, provided care has been taken not to apply the revulsive over a part attacked by the gout, since the effect of all inflammatory action is to cause uric acid to disappear.

"The clinical importance of this process may be easily understood; in many cases it is an excellent means of diagnosis. It permits also of ascertaining under what circumstances an excess of uric acid is produced in the blood. This phenomenon is constant in cases of chronic gout, but it increases in in-

Anomalous forms and complications of gout.—Stoll and Garrod have pointed out, in certain rare cases

tensity during the attack, and afterwards falls below the primitive rate. In acute gout it disappears during the intervals of the attack, at least early in the disease (Garrod; Reynolds's System of Medicine, London, 1866, Art. Gout), and is again manifest for some time before the access of a new attack. Finally, in cases of non-articular gout, various accidents, which seem connected with the same condition, are observed; indeed, analysis reveals in these the presence of uric acid in the blood.

"On the contrary, acute articular rheumatism (Garrod), or chronic (Charcot), is never connected with this dyscrasia; and this is a useful element of diagnosis in doubtful cases; for it suffices to apply a small blister to the patient, or to draw from him a few grammes of blood, to determine definitely if it is gout or rheumatism to which the phenomena under observation are referable.

"Still, this excess of uric acid must not be considered as pathognomonic of the gouty diathesis; it is likewise observed in Bright's disease and in lead poisoning. And yet it is probable that this special condition does predispose to gout, the frequency of this affection in the lead workers of London seeming attributable to it alone (Garrod).

"The presence of uric acid in the humors of gouty patients, is revealed by the composition of various fluids, both normal and pathological. I have discovered it in the cerebro-spinal fluid; Garrod met with it in the serosity of pleuritis and pericarditis.

"We do not know certainly whether it exists in the intestinal secretions; but it is found in the pustules (?) of eczema (Golding Bird), and in the furfuraceous substance which sometimes forms on the skin of gouty patients, this being composed of urate of soda (Petit; O. Henry; Journal de Pharmacie, October, 1841).

"In no case, however, does the perspiration, spontaneous or excited, contain a single trace (Garrod; de Martini; Ubal dini; Union Médicale, April, 1860, No. 40, p. 24.)"

which are met with, a spasmodic constriction of the œsophagus, which offers some obstacle to deglutition.

The intestines and stomach present some very remarkable phenomena in certain cases of chronic gout, particularly those complicated with albuminuria, of which we shall soon speak. Urate of soda, as well as urea, when not perfectly eliminated by the kidneys, may seek exit through the stomach and intestines, giving rise in these organs to disorders of the most varied character.

Gouty persons, through the refinements of their epicurism, submit their livers to the severest trials, and, as Scudamore has shown, this organ is rarely healthy in gout. M. Galtier-Boissière has sometimes recognized temporary enlargements of the liver, preceding attacks of gout.

The influence of gout on the affections of the heart is manifest, but it is not, as in rheumatism, endocarditis, pericarditis, and valvular disease that are observed. The lesions of the heart of gouty patients have their cause in alcoholism, or in Bright's disease, an analogous affection, of which we shall speak.

Gouty nephritis (Rayer), which I have so often designated in my course and consultations under the name of *traumatic albuminuria*,—because I considered it due to the presence of foreign bodies (urates, oxalates of lime),—is much less formidable than true Bright's disease, but it is important to combat it by the rational treatment for polyuria, since it may induce a train of serious disorders of the kidneys.

"It may be called," says M. Charcot (*loc. cit.*), "*gravel of the kidney*. It presents the characters of

interstitial nephritis, but it is mainly characterized by an infarction of sand and uric acid, sometimes in a crystalline state; larger gravel stones may likewise exist. These deposits are found: 1st, upon the surface of the kidney and in the cortical substance; 2d, in the mammillæ and papillæ; 3d, in the calyces and pelves; in this latter situation, the concretions are generally the largest.

"These alterations are met with independent of articular gout, but they are incontestably very common in this disease.

"In the second place, we have a gouty nephritis, properly so called; this is the *gouty kidney* of English authors. It was pointed out by de Castelnau, in 1843, and has been well described by Todd and Garrod. It is characterized anatomically:

"A. By infarctions of urate of soda, in the form of white streaks; they are met with in the tubular portion, never in the cortical substance, but sometimes in the mammillæ. Under the microscope, they present the form of acicular crystals, and are situated, according to Garrod, in the interspaces of the tubuli uriniferi; but we believe that we have demonstrated them to occupy the cavity of the tube itself. (*Charcot and Cornil, Mémoires de la Société de Biologie, 1864.*)

"B. By concomitant alterations of the kidney, which correspond to the ordinary lesions of Bright's disease.

"There exists at first a parenchymatous nephritis, which may show itself in two different conditions. In the first, the kidney preserves its ordinary volume;

but the cortical substance thickens, and presents a yellow tint. The Malpighian bodies are injected; the urinary tubules are filled with epithelial cells, distended, opaque and full of fatty or albuminoid granulations.

"In the second condition, there is atrophy of the cortical portion, and a granular state of the kidney, which properly belongs to Bright's disease.

"But, independently of parenchymatous nephritis, an interstitial nephritis, corresponding to the gouty kidney of English authors, is met with.

"This is characterized mainly by thickening of the connective tissue between the tubules, with proliferation of the nucleated cells (*noyaux*); the kidney is diminished in volume, and is wrinkled, granular, and rough on the surface. The cortical portion is decidedly atrophied. The lardaceous kidney has never been noticed in this affection.

"These alterations, according to Garrod, show themselves in every case of inveterate gout of which an autopsy is made. They may exist early, having been met with after six or seven attacks. In a case observed by Traube, symptoms of renal complication appeared as early as one year after the first invasion of gout. This would be a visceral form of the disease.

"Although the alterations in the renal parenchyma, independent of urate of soda deposits, differ in no wise from those which exist in Bright's disease, still the symptoms proper to this gouty albuminuria are marked by a benignity, by the feeble degree of intensity they present. We do not wish to dwell upon this point here; it belongs to symptomatology.

"To this order of causes may be referred several accidents which figure quite often among the symptomatic phenomena of gout. Thus, dyspepsia is often aggravated, if not produced (*de toutes pièces*), by this pathological state of the kidney; œdema is not a rare consequence. Convulsive and comatose uræmia are also observed in gouty patients, attributable, doubtless, to the condition of the kidney. Cerebral apoplexy and hypertrophy of the heart may likewise pass for remote effects of the renal lesion."

Gout, or rather polyuria, is accompanied also with cutaneous complications. (See "Additional Note," page 300.)

Prophylaxis for polyuria.—This involves many important hygienic questions; it interests particularly those affected with uric acid gravel, those operated upon by lithotripsy, and finally, the gouty. The safety of the precepts which I shall lay down, cannot be doubted, most of them have the double sanction of observation and reason.

Alimentation.—The first indication to be fulfilled is to eat moderately, and to drink, each day, watery fluids in quantity sufficient to reduce the urine to a specific gravity of about 1015, which requires about three pints for an adult man.

Pure water of good quality is, in most instances, the best drink, and the one best tolerated. I often prescribe decoctions of dog's grass, or cherry stalks. Infusions of *loxa cinchona*, *pareira brava*, light tea, and orange flowers are good. Among the mineral waters, I prescribe the calcareous waters of Contrexéville, Evian, Saint-Galmier, Pougues, and Orezza.

These were suggested to me by witnessing the success of Madame Stephens's remedy.

In dieting, the nitrogenized elements should be allowed in proper measure, but care should be had not to urge too great restriction, and especially not to suppress them for patients who are capable of energetic exercise. Broiled meats in moderate quantity, not only are not injurious, but are absolutely indispensable to patients to whom exercise is recommended. The routine of some practitioners, in condemning their patients to an exclusively vegetable diet, is to be avoided, and it should be remembered that gouty persons readily become anæmic. Without doubt a moderate allowance of meat is proper.

In polyuria, it is almost always necessary to diminish the amount of food habitually taken, for in general, such patients, except those whose disease is due to lead poisoning, are disposed to over-indulge. To facilitate digestion, the subdivision and mastication of the food should be as thorough as possible.

If the plastic elements only require watching, alcoholic liquors should be entirely suppressed, or, at least, considerably diminished. Allow neither brandy nor liquors; light wine diluted with water is hardly to be tolerated, and in prescribing them, select only those whose action is incontestably useful. We shall return to this matter of the choice of wines.

The direction of the diet of persons emphatically attacked with polyuria, often presents serious difficulties. An abundance of food gives rise to loss of appetite and dyspepsia, and a want of habitual exercise leads to a state of depression and feebleness.

A little brandy, Chartreuse wine, or something of the kind, stimulates and reanimates these patients, and they cannot understand why the only thing which affords immediate relief should be forbidden; but it is a present benefit which is more than paid for later.

Fats, such as butter, oils, &c., which are the richest elements of calorification, should be taken with proper moderation, especially if the patient be obese; the same remark applies to saccharine food.

I cause sorrel and tomatoes to be left off, not because they form uric acid, but because they give rise to oxalate of lime, which may become the nucleus of a calculus.

For the same reason, I forbid the diet to be entirely vegetable; since, under its influence, oxalate of lime might be formed, giving rise to calculi yet more distressing than those composed of uric acid.

As a rule, I repeat, moderation in all kinds of food is to be recommended. Some are in the habit of prohibiting coffee, but neither the facts nor theoretical considerations point to any serious motives for its prohibition. However, here is what I have to say upon the subject:

There are certain drinks and certain food of which the effects should be watched, since these vary with the subjects. Such are green beans, asparagus, tea, and coffee. All aliments, like tea and coffee, which act upon the nervous system, diminish the metamorphosis of tissue, and may not therefore the proportion of uric acid be increased at the expense of the urea?

Excretions.—Polyuric patients should acquire the habit of having two evacuations daily; at regular

hours. An important precept for those predisposed to the uric acid diathesis is to increase the function of the skin, for which bodily activity is pre-eminently adapted, but it will be of benefit for the patient to make use of energetic frictions with dry cloths or an India-rubber brush.

Bodily activity.—Daily exercise in the open air, by calling largely into play all the forces, I regard as the only remedy for polyuria; it is manifest that this must be regulated by custom, and that all excess should be avoided, as leading to prostration and postponing recovery; but observe, exercise is the cornerstone of the prophylaxis of polyuria. Frequenting a well-directed gymnasium is the best advice to be given.

Every advantage is there united: emulation, varied movement, hydropathic measures, and every intelligent precaution against the chances of cold not being followed by reaction. (For all the details relating to exercise, I cannot do better, to avoid repetition, than to refer to what is said in my "Memoir upon Training and Forced Exercise in the Treatment of Glycosuria," in the *Annuaire de Thérap.*, for 1865.)

"Respire as thoroughly as possible while undergoing the gymnastic movement, so as to give full development to the lungs; this is a most useful precept, but difficult to put into practice by the long list of obese patients, as well as those naturally lazy. With an intelligent will, the quantity of air taken into the lungs may be largely increased, and thus a happy step is made in prophylaxis.

"It is evident that the efficacy of a prophylactic

treatment will be in direct proportion to the activity of the patient, and to the amount of energetic exercise indulged in. When opportunity and his strength permit, nothing would be better for polyuric patients than to follow the training of a pugilist, in all that relates to alimentation, exercise, and care of the skin." (Supplément à l'Annuaire, for 1861.)

Therapeutic measures.—In speaking of the remedies for polyuria, several of them will be found to belong to the domain of hygiene also, such as mineral waters, certain wines, &c.

The use of alkaline waters (Vals, Vichy, &c.) in cases of polyuria offer several advantages: first, they introduce a large quantity of water into the system; secondly, they increase the alkalinity of the blood, and favor the disintegration of organic matters that should be eliminated; thirdly, they increase the solubility of uric acid.

Lithia forms with uric acid, salts which are more soluble than those of potassa or soda, and, for this reason, English physicians have used it with advantage (as they declare) in polyuria. I have treated of this substance in a former Annuaire, but the elevated price of lithia and the absence of precise knowledge of its physiological properties have hitherto, to a great extent, restricted its use in this country.

As for myself, I have not had any very good occasions for its use; I generally limit myself to an alkaline bicarbonate, to alkaline salts of organic acids, to benzoic acid, or to the acid or other natural products of the decomposition of benzoic acid.

With respect to other remedies we have no reason

to be very sanguine: they have no curative effects; they only quiet pain, mask evil, and add to the bad chances which already exist, by fatiguing organs, increasing the renal irritation, and injuriously modifying the blood.

What abuses have not been perpetrated with colchicum and veratria! What reverses come to counterbalance the real ease they bring!—for, indeed, these agents have a wonderful power in this kind of disease over the distressing pain which accompanies it.

Sulphate of quinia is also of great efficacy, as numerous successes have proven.

According to Frank, quinine diminishes the production of uric acid,* and the same thing is the case with santonin, which, according to Canova, is very useful in polyuria; strychnia, on the contrary, increases the proportion of uric acid excreted.

Among all these remedies, those which are daily prescribed are the alkalies, such as Vichy and Vals water, the bicarbonates of soda and potassa, citrate of soda, and Rochelle salts.

I frequently employ the two last. To repeat: the alkalies, extolled by chemists, are incontestably useful; but in many cases they are abused, or used inopportunistically. Alkalies are dangerous for elderly, feeble, and anæmic persons, and also for those whose urinary excretion is slow and insufficient. With these cases we are limited to a hygienic treatment. Here are other measures belonging to the hygiene

* The amount of hippuric acid increases inversely with uric acid. Quinine gives rise to benzoic acid which combines with the uric acid.

of this disease, and to them I attribute great efficacy, after long experience.

Hygienic measures for transforming uric acid into hippuric acid.—The foregoing measures are evidently not the only ones at the disposition of the physician; he may go farther and try, by special agents, to convert the uric acid into hippuric. It must be remembered that the former is insoluble, whilst the latter is soluble, and easy of elimination; in this lies the advantage of the change. Doctor Ure made the important observation that, after the ingestion of benzoic acid or a soluble benzoate, the urine undergoes a remarkable modification: uric acid disappears, and is replaced by hippuric acid.

In this case benzoic acid, for which benzoate of soda, or better still benzoate of lime, may be substituted, combines with the constituent elements of uric acid, producing hippuric acid, which forms with soda, potassa, ammonia, or any of the usual bases contained in organic fluids, salts of great solubility.

The dose of benzoic acid or of benzoate of lime is from 15 to 45 grains in twenty-four hours.

Great advantages have been obtained, in calculous and gouty subjects, by the use of each of these substances. But is the transformation of uric acid into hippuric always complete? I do not believe that it is; in certain cases, notwithstanding the administration of benzoic acid, I have succeeded in discovering a notable quantity of uric acid in the urine. I admit that such cases are exceptional, and the question may arise as to whether the incomplete trans-

formation should not be attributed to an insufficiency of benzoic acid taken within a given time.

Be it as it may, I still prescribe granules, containing each one-fifth benzoate of lime, in doses of one or one and a quarter drachms a day. A glass of water is given with every dose.

In many cases I prefer benzoic acid, and prescribe 15 grains dissolved in two pints of water, in twenty-four hours. Benzoic acid obtained by sublimation is most disagreeably acrid, and should not be used; but the pure acid, obtained by the moist process, has an acidulated taste with scarcely any odor.

Another observation made by Lauteman is that there exists an acid, more agreeable than benzoic acid, which has the same property of preventing the formation of uric acid. It had already been observed that cinchona in infusion produced this effect. The acid in question is quinic, or kinic, acid; this is a diameric acid, and in splitting-up in the body gives rise to benzoic acid, which, in its turn, unites, as we have seen, with uric acid to form hippuric acid. The advantage of kinic acid is that it has no more taste than tartaric or citric acid.

Sieber and Zwenger have observed that the urine of herbivora contains a large proportion of hippuric, and some benzoic acid. This leads to the belief that grass and herbs contain either kinic acid, or some such diamerone with a benzoic residue; and, indeed, the urine of cows and other herbivora is now collected to extract benzoic acid from; it is much used in dyeing.

Many plants and aliments have been highly rec-

commended as remedies against gravel. And it may be that some are more efficacious than generally supposed, especially when they contain kinates of potassa or lime, or simply alkaline salts of organic acids. Among special aliments, the black radish, in large quantity, has lately come into such favor as to merit investigation.

The "Reine-Claude" plum (green gage) contains benzoic acid or a diamerone with a benzoic residue; its use may, therefore, be beneficial in polyuria.

There is a hygienic product much more agreeable to our gouty patients. This is Rhine wine, and the wine of Riesling and of some other grapes, described in the "*Ampélographie rhénane*;" these are said to have the power of diminishing the proportion of uric acid in the urine. May it not be that these grapes contain, in addition to tartaric acid, another acid like kinic acid. Such acids are met with much more often than is generally believed, in the most common vegetables, and, by splitting-up, yield benzoic acid, which controls the formation of uric acid.

Here again the efficacy of this wine resides in its property of producing hippuric acid at the expense of uric acid.*

* There is another supposition based upon incontestable facts. Light white wines contain more bitartrate of potassa than rich red wines. In the circulation, the tartaric acid is burnt, and bicarbonate of potassa is formed, which acts like a mild alkali, the continued use of which brings no derangement of health. In this connection, I cannot forego the pleasure of quoting a passage from one of M. Liebig's late letters:

Succinic acid, which, according to the beautiful discovery of M. Pasteur, is among the products of

"By virtue of its peculiar principles, wine presents certain conditions which together compensate, more or less, after some time, for the cerebral and nervous excitation caused by the alcohol it contains; and the use of wine is attended with consequences far less unfavorable than those of brandy.

"The commercial value of a wine is in direct ratio to its immediate, and in inverse ratio to its subsequent effects. Moreover, all things being equal, the price of a wine is the more elevated the better its effects are neutralized by a corresponding increase in the functions of the lungs and kidneys. In determining the value of wines, consideration is always had of their richness in alcohol; still the price of fine wines is not always in proportion to the alcohol they contain, but rather depends upon their proportion of non-volatile principles.

The following are Rhine wines, ranged in the order of their commercial value:

	Alcohol.	Solid Residue.	
Steinberger (1846), . . .	10.87	10.55	} Fresenius.
Markobrunner, . . .	11.14	5.18	
Hattenheimer, . . .	10.71	4.21	
Steinberger (1825), . . .	10.87	9.94	} Geiger.
Rudesheimer, . . .	12.61	5.18	
Markobrunner, . . .	11.60	5.10	
Geisenheimer, . . .	12.60	3.06	

"The flower, or bouquet, of wine does not influence its price farther than being an index of its collective effects.

"Wine is not surpassed by any natural or factitious product, as a means of restoring the exhausted forces of life: it animates and revivifies the spirits in moments of sadness; it corrects and compensates for the effects of perturbations of the economy, to which it serves even as preservative against troubles of inorganic origin.

"The fine Rhine wines and certain wines of Bordeaux are

alcoholic fermentation, seems to act like benzoic acid in diminishing the production of uric acid, and in a similar manner, probably.

Whatever of truth these theoretical views contain, it certainly would be of the greatest service to obtain a wine, at a reasonable price, which would enable patients with uric acid diathesis to dispense with all medication.

It should be a white wine, as rich as possible in bitartrate of potassa; for it is beyond question that this salt, by its transformation into the bicarbonate, contributes to diminish the acidity of the urine, thus preventing uric acid deposits. To increase its useful effects, a portion of the bitartrate may be converted into the bikinate by the addition of kinate of lime. This operation in nowise alters the other hygienic properties of white wine.

Guided by what has already been done upon the Rhine, I have for a long time had this question under consideration in my vineyard.

It is, of course, understood that wine should always be taken with moderation; 1 or 2 pints, diluted with as much water, in twenty-four hours.

remarkable for the *innocuousness* of their effects, on the next day. It is *astonishing to see* the prodigious quantities of Rhine wine which *individuals*, at every age, consume, without injury to their health or intelligence. Nowhere are gout and gravel so rare as in *Rhenish districts*, so favored by nature; and in *no part of Germany* is the price of drugs less high, in proportion, than in the opulent cities on the Rhine; there wine passes as the universal remedy—for the healthy, for the sick, and as the milk of old age."

By a striking coincidence, I am endeavoring (on my farm), by restoring and perfecting the modes of culture formerly followed by the vine-dressers of dukes and monks in the grand vineyards of Bourgogne, to produce a red wine comparable to that of the best vintages. (This wine I am obliged to prohibit absolutely to my patients, since it increases the formation of uric acid.) On one of the hillsides, however, I am cultivating a grape which yields a white wine, which is a most agreeable and efficacious remedy.

But if medicine is difficult, the vine-culture is no less so, and the life of man does not suffice to resolve a problem. And we should not be astonished that almost all the great vineyards have been established by religious corporations with due regard to traditions.

CYSTINURIA.

Cystine and cystine calculi.—I shall say very little upon cystine calculi. They are very rare, two only being found in 129 cases of calculus (Taylor). Cystine was discovered by Wollaston in 1805 (Philosoph. Trans., 1808), and has since been investigated by Marcet and Prout, in England, and by Flaubert, of Rouen, Civiale, Leroy d'Etiolles, August Hérault, of Montpellier, in France. In this connection, the excellent article in the "Traité de Chimie Anatomique," of Messrs. Robin and Verdeil, may be consulted; also a Treatise on Gravel, by M. Leroy d'Etiolles, Jr.

Properties.—Soluble; inodorous; crystallizes in hexagonal prismatic plates; burns with an alliaceous

odor; easily crystallizable. It is soluble both in acid and in ammonia, but more so in the former.

Analysis.—Cystine has been analyzed by Baudrimont and by Malaguti.

Etiology.—Its formula, according to them, is $C_6H_6NO_4S_2$ ($O=8$); and approaches, therefore, in composition to choleic acid ($C_{50}H_{45}NO_{14}S_2$). Choleic acid is one of the principles of the bile, and cystine probably owes its origin to an incomplete combustion or transformation of one of these principles.

Cystine has been observed at all ages, and in man and woman, but it is most common in woman. In 42 calculous women E. Leroy d'Etiolles met 5 cases of cystine stone. Evidently its formation is, in some cases, influenced by hereditary predisposition.

It has been found in neutral, alkaline, and also in slightly acid urine, where it seems to coexist with uric acid. Cystine has been demonstrated in the kidneys, bladder, and urine.

Prophylaxis.—This consists in increasing the urinary excretion by means of large quantities of watery drinks. Exercise is also necessary. There should be one or two regular stools a day, produced, if necessary, by the aid of purgatives which have the effect of increasing the hepatic function.

OXALURIA.

The too great production of oxalate of lime in the body is one of the most important and difficult problems that presents itself to a physician. Its extreme insolubility, and the variety of conditions

under which it may form, offer abundant material for reflection.

When the proportion of oxalate of lime produced is moderate, it is eliminated by the kidney. It may then be found in the urine without our attention being directed to it by any apparent disorder. But when the proportion is large, it gives rise to gravel or calculi. These deposits are, in general, the portion of early life, and are most frequent in the country.

They are particularly to be dreaded, because they crystallize in sharp, cutting plates, are hard, and excessively insoluble.

So far, oxalate of lime has been demonstrated only in the kidneys, bladder, and urine. But, indubitably, it exists, under certain conditions, in the blood, when it may give rise to various phenomena, some of which are very formidable.

Golding Bird (Med. Chir. Review, 1848) first gave the name of *oxaluria* to the excretion of a large proportion of oxalate of lime in the urine, and although it is not entirely expressive, I have adopted it. (Annuaire, 1850.)

The name of *oxalhypostasis* (deposit of oxalate of lime) would be more appropriate than *oxaluria*, for it is only when this salt is deposited in the blood, kidneys or bladder that it becomes a cause of disease.

A complete history of oxalate of lime, considered as an immediate pathological principle, may be found in the "Chimie Anatomique" of Messrs Robin and Verdeil, and I cannot do better than to refer my readers to it. I should, however, mention a recent important work on the "Presence of Oxalate of Lime

in Urinary Sediments"—that of M. Gallois, published in the *Gazette Médicale*.

What distinguishes oxaluria from polyuria is its intermittent character—polyuria being generally permanent.

Oxalate of lime does not require a urine of high specific gravity in which to form concretions; I have observed them in urine not higher than 1017; and they may form in acid urine.

The interesting points of its hygienic history are : 1st. The frequency with which it forms calculi; 2d. The still greater frequency of the nuclei composed of it; 3d. The concomitant disorders of health; 4th. Acute poisoning by the presence of large quantities of an oxalic compound; 5th. The difficulties of the treatment, on account of the insolubility of the salt; 6th. The obscurity which, under certain circumstances, surrounds the conditions of its formation.

Characters of oxalate of lime.—It presents itself under three principal forms: 1st. As a simple deposit; 2d. As gravel; 3d. As calculi.

1st. *Deposits.*—Its most common and familiar form is that of impalpable powder (composed of octohedral crystals resembling common salt) associated with urea, from which it may be distinguished by its insolubility.

2d. *Gravel.*—In the form of gravel it often presents a crystalline structure—sharp, cutting plates, which are seen to be an assemblage of octohedra. When a gravel attains a certain volume, it constitutes a calculus.

3d. *Calculi.*—These are the mulberry calculi, so

called on account of their black color and their roughened exterior. Whence comes their blackness? It may be that the sharp plates, of which they are composed, injure the smaller vessels in the kidney, and, producing capillary hemorrhage, blood is deposited on their surfaces.

Chemical characters.—This species of gravel is among the most insoluble. When calcined, and the calcination is pushed very far, it yields lime as a residue; if the calcination be moderate, carbonate of lime is formed, which dissolves with effervescence in hydrochloric acid. If this solution be treated with oxalate of ammonia, oxalate of lime is again formed.

Etiology.—Conditions of formation.—Oxalate of lime exists constantly in the urine of herbivora. In man, its production, or rather its excretion, is intermittent; it is usually found after the second emission of urine in the morning.

The causes of the presence of oxalate of lime in the urine are various.

1st. *Ingesta.*—Aliments containing oxalic acid, as sorrel and tomatoes, evidently favor the production of oxalate of lime in the body; there can be no necessity of insisting on this point.

Moreover, observation shows that certain organic acids may, under conditions not yet determined, undergo, partially at least, transformation into oxalic acid; thus, acid fruits, apples, pears, &c., containing alkaline citrates and malates, and vegetable diet, give rise to the presence of oxalate of lime in the urine. This explains the frequency of calculi in children and in inhabitants of the country.

I insist, then, upon the character of the ingesta being a prime cause, since it plays a considerable, and perhaps, an all-sufficient rôle. Indeed, it suffices to eat sorrel and tomatoes, in order to have, in a little while, oxalate of lime in the urine.

Acid fruits, apples and pears, contain citric and malic acids, which, in feeble or sickly persons, and in those already predisposed, are transformed into oxalate of lime, which is thus increased; so likewise, certain vegetables add to the quantity of this salt in the urine.

Finally, certain facts seem to indicate that an excess of sugar, sparkling wines and brisk beer, act in a similar manner.

Nothing, then, is more manifest, than the influence of food. Nevertheless, oxalate of lime is sometimes formed in the system, independent of any food containing oxalic or any allied organic acid. Thus, in making autopsies upon rats at Montfaucon, calculi of oxalate of lime have been found; and M. Lassaigne has taken calculi of this substance from the bladders of dogs.

M. Wöhler observed that by administering urate of ammonia to certain animals, or by injecting it into their veins, oxalate of lime and urea appeared in excess in the urine—the uric acid having been transformed into these two substances.

Thus, polyuria may give place to an abundant production of oxalate of lime; which supposition explains the presence of calculi of this kind in dogs and rats.

M. Wöhler has also observed, that by giving to

certain animals oil of bitter almonds deprived of hydrocyanic acid, oxalate of lime appeared in the urine.

Certain morbid states sometimes contribute to increase the proportion of oxalate of lime, or to make it appear when absent. Among these may be mentioned the diminution of respiratory function, in cases of considerable depression during chronic diseases, paralysis and consumption. We may also include diseases which, affecting the pulmonary functions, interfere with general nutrition—such are disorders of the respiratory apparatus (phthisis, repeated bronchitis), long convalescence, dyspepsia, typhus and typhoid fever, glycosuria. But before any of these, seminal losses should be placed. The coincidence between seminal losses and the presence of oxalate of lime in the urine has been noted by so many observers, that I need not dwell upon it here. I have myself observed it, but I am unable to affirm that it does not depend upon the food and an insufficiency of exercise; and to patients thus affected I always proscribe the use of substances containing oxalic acid, or any principle which may give rise to it. I am not less careful to prescribe for them whatever increases the respiratory energy,—gymnastics, natation, hydropathy, &c.

Accidents due to the too abundant formation of oxalate of lime.—The different forms of oxalhypostasis are manifested: 1st, by gravel of oxalate of lime; 2d, by renal calculi and gravels; 3d, by vesical calculi; 4th, by oxaluria; 5th, by oxalic acid poisoning.

1st. *Oxalate of lime gravel* is a frequent cause of

hæmaturia. This is easily understood; it exists in the form of sharp and hard plates, which cut the renal tissues without difficulty.

2d. *Renal calculi and gravels*.—These are recognized by their irregular form and their brown color. They wound the kidney and give rise to pain and hæmaturia.

If, added to these symptoms, we have mucous, sanguinolent, or purulent urine, and that in a patient who has indulged in sorrel, we may be sure that the case is one of gravel or calculus in the kidney. A scrutinizing examination of the urine, and a careful inquiry into the previous history, will almost certainly lead to a correct diagnosis.

3d. *Vesical calculi*.—These, like those found in the kidney, are irregular and very hard; they are called mulberry calculi on account of their color and roughness. They cause a great deal of pain in the bladder; give rise to hæmaturia, and to cystitis of the most distressing character. Moreover, they are very difficult to crush, and as to dissolving them, unfortunately, the present state of our knowledge does not permit us to think of it; for they are almost entirely insoluble in water and other harmless solvents.

The following is an estimate of their frequency, made from an examination of several museums: At London, in Hunter's museum, 1 in 13; in the museum at Manchester, 1 in 10; Guy's Hospital, Wood's, Norwich, and Bristol, 1 in 3.

4th. *Oxaluria*.—This is another form, whose prin-

cipal symptom is the constant emission, in the urine, of gravels of oxalate of lime.

Oxaluria is characterized by loss of appetite sometimes attended with severe gastralgia. Another sign is depression with considerable loss of strength, especially when there is much of the oxalate passed.

Another symptom is asthenopia, even to the extent of amaurosis.

These cases of oxaluria are often accompanied by seminal losses, which may explain the principal changes in the body, described by Golding Bird. It is in this condition, particularly, that tomatoes, sorrel and the like are to be avoided.

5th. *Oxalic acid poisoning*.—One word now upon this. Oxalic acid, as well as the soluble oxalates, is poisonous; but how? It has a mechanical action upon the vascular system, but no particular effect upon the nervous apparatus, like strychnia and morphia. As there are always in the blood salts of lime, oxalic acid introduced into the body forms an insoluble oxalate of lime, which gives rise to emboli, and formidable accidents.

I am convinced that this poisoning is quite frequent in gouty patients, in the last stages of polyuria. It is then that uric acid is converted into urea and oxalic acid, in over-abundance,—hence the formation of oxalate of lime, with its consequences. The complications which then arise are commonly called retrocedent gout (*remontée*). I have seen patients, who habitually passed only 20 grammes (308 grains) of urea in twenty-four hours, produce as much as 130 grammes (2000 grains) in the same time. For

several years past, in my course, I have insisted upon this fact of embolism in gout; I also treated of oxalic poisoning in the final article in my *Annuaire* for 1866.

Prophylaxis; hygiene.—The exaggerated production of oxalate of lime may be referred to two distinct causes: 1st. The habitual use of aliments containing oxalic acid, or substances which are easily transformed into oxalic acid; 2d. The abnormal decomposition of protein bodies. The prophylaxis, therefore, should likewise be referred to two distinct heads.

It would be most desirable to know better than we now do the conditions of solubility of oxalate of lime in certain inoffensive neutral salts which are found in the blood; for, upon such knowledge we might base rules of prophylaxis, suitable to all conditions.

Let us again state the most important rule, which is adapted to every case.

Sufficient water must be drunk to reduce the urine to a specific gravity of 1015. Those drinks are preferable which may be taken in largest quantity—the waters of Contrexéville, Evian, Saint Galmier, Orezza; and decoctions of dog's-grass, cherry stalks, &c. The quantity of urine passed in twenty-four hours should amount to three pints at least. The evacuations should be regular—twice a day if possible—besides energetic exercise, dry frictions, hydropathy.

If, now, we are concerned with the first condition of the formation of oxalate of lime,—that of the in-

gestion—the prophylaxis should be a total abstinence from sorrel (particularly raw). Cooked sorrel is less to be feared, for, when it is dry, the cooking deprives it of most of the binoxalate of potassa which it contains. Tomato sauce should likewise be prohibited, also green fruit, and much ripe fruit, and saccharine food and drinks.

These maxims are imperious whenever the urine contains mucus, pus, or blood.

Gaseous drinks should equally be avoided, such as sparkling wines, and beer charged with carbonic acid. It is indispensable to observe the sediments in the urine after the use of the various kinds of food and drinks. Each patient has individual peculiarities with which we should become familiar, so that everything injurious may be avoided. In a word, the usual treatment is to be modified to suit every individual requirement.

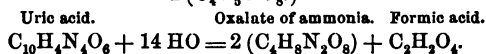
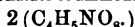
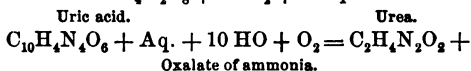
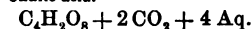
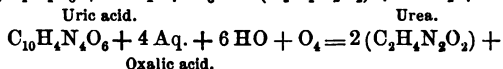
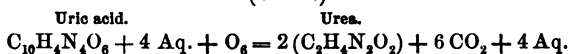
The diet should be varied and supporting, but moderate, as in cases of polyuria, with which this disease is frequently complicated. I prohibit milk and cheese; and, as a rule, total or partial abstinence from alcoholic drinks is recommended, and particularly, the avoidance of such food as may give rise to oxalate of lime.

Energetic exercise in the open air, and attention to the skin are not less useful, the necessity of the free introduction of air into the lungs being essential. Indeed, if, under the influence of an insufficient quantity of oxygen, uric acid is transformed into urea and oxalic acid, when the supply of oxygen is abundant, instead of oxalic acid, carbonic acid is pro-

duced. This is why it is important to resort to exercise and cold baths, followed by brisk frictions.

I give a series of examples, by formulæ, of the conversion of uric acid into carbonic acid and urea; into oxalic acid and urea; oxalate of ammonia and urea; oxalate of ammonia and formic acid.

(O = 8.)



It is necessary, also, to combat the seminal losses which often accompany this disease; and this is best done by regulating the functions, by a cold diet, by avoiding constipation, and by increasing the action of the skin by means of hydropathy, frictions, and exercise.

For the production of oxalate of lime, depending upon the abnormal conversion of nitrogenized substances (and, probably, the alkaline urates derived from them), the prophylaxis is less certain.

As to remedies and drinks, opinions seem at first sight to be opposed to each other, but we shall see that these contradictory indications may be utilized in various conditions; indeed, both acid drinks and alkaline waters have been alternately recommended.

Golding Bird orders each day, two or three cups of the infusion of anise-seed, or of leaves of balm, or of mint-water acidulated with five or six drops of nitro-muriatic acid. I have often witnessed the good effects of this latter, but I do not believe that it acts as a solvent for the oxalate of lime, but is useful in combating the dyspepsia so often present in oxaluria. I frequently order with success, before each meal, a wineglassful of wine of cinchona, acidulated with hydrochloric acid, in the proportion of five grammes ($1\frac{1}{2}$ drachm), to the pint.

M. N. Gallois has praised the alkaline waters in oxaluria, particularly when accompanied by polyuria. I never have recourse to them when the urine contains much mucus or pus; and even in the most favorable cases, when the urine hardly contains any mucus, I always prefer the alkaline calcareous, to the alkaline soda waters. Under the free use of the waters of Contrexéville, I have seen large concretions of oxalate of lime voided, which had been retained for a long time in the kidney.

In these conditions I frequently administer with advantage, benzoate of lime, or better, pure benzoic acid, as suggested in the treatment of polyuria.

Here also, the wines of the Rhine, of Riesling, and of my vineyard, may be useful, but they should always be well diluted.

We may also prescribe such articles as green gages, which contain benzoic or some other acid, as kinic acid, which furnishes it by its decomposition.

Phosphypostasis (ὀφίστασις). *Phosphatic deposits in the body*.—It is not the fact of the abundant intro-

duction of phosphate of lime or magnesia which should occupy us, pathologically speaking; it is only the abnormal deposit of these phosphates, and more particularly of the ammoniaco-magnesian phosphate, which act as insoluble foreign bodies, giving rise to serious disorders.

Until now the pathology of phosphatic deposits has been studied only with reference to the bladder, constituting there the white gravel, and phosphatic calculi. Mention has been made of the phosphate of lime in connection with the so-called ossification of arteries in old persons, and the tophaceous deposits in gout. There can be no doubt that the ammoniaco-magnesian phosphate is formed under the conditions which we shall name, in the blood and other fluids, and in various organs of the body. When the amount thus formed is large, it gives rise to disturbances of the circulation and other functions.

Let us examine the principal sources of the magnesian phosphate, and the fluids and organs in which it has been found. The muscles, according to Chevreul, contain 23 parts in 1000 (*Mémoires de la Société d'Agriculture de France, pour 1863*). The aqueous extract of flesh contains 5.76 parts in 1000 (Keller, *Elém. Inorganique de la Chaire Musculaire, Ann. de Chimie, 1849*). Liebig has demonstrated that the magnesian phosphate is more abundant in muscle than the phosphate of lime.

Oatmeal, according to Berthier (*Mém. de la Société Centrale d'Agriculture, 1853*), leaves only 0.0068 parts ash, which contains, phosphate of potassa, 0.041;

phosphate of lime, 0.0016; and phosphate of magnesia, 0.0011, almost as much as of phosphate of lime.

Phosphate of magnesia is found in every tissue and fluid of the human body. In man it is eliminated in the urine; in herbivora, by the fæces. The blood of man contains more than that of other mammifera—1.68 parts in 1000, according to Poggiale (*Compte rendu de l'Acad. Sciences*, t. xxv, p. 110).

The ammoniaco-magnesian phosphate is principally found in altered urine, and forms the basis of urinary calculi which we shall proceed to study; it is found in the intestinal concretions of herbivora, and in the fecal discharges during typhoid fever and dysentery. Henry Gmelin (*Chimie*, 1829), has discovered the ammoniaco-magnesian phosphate in various pulmonary concretions. M. Moissenet has found it crystallized on the peritoneal surface of the ascending colon, in a man dead of meningitis; the autopsy having been made thirty-six hours after death. Stromeyer is said to have found it in the choroid plexus (Valentin).

This will suffice to show that the triple phosphate is produced in the body, but we must admit that this is rare, and when produced in large quantity it becomes the source of grave disorders.

In order not to depart from our object, I shall limit myself to pointing out the conditions of its production in the blood.

1st. The continued ingestion of certain ammoniacal salts may contribute to its formation; and it is in view of this possibility that I now prescribe the carbonate of ammonia less often than I formerly did,

except in certain forms of diabetes which do not yield to diet and exercise.

2d. When the kidney no longer excretes urea, on account of the specific alterations of Bright's disease, this substance is then eliminated by the digestive apparatus. But here, most often, it undergoes ammoniacal fermentation, and is converted into carbonate of ammonia. The continued presence of this last salt is the cause of those digestive disturbances usually observed towards the close of a fatal case of Bright's disease. The carbonate of ammonia is also, in part, absorbed. When phosphate of magnesia exists in the blood (and it is always present when bread is eaten), ammoniaco-magnesian phosphate is formed, which cannot be eliminated by the kidneys. It may be supposed from this, that these uræmic accidents, upon which so much has of late been said, have no other origin; for urea of itself is relatively innocuous.

3d. Excessive animal diet, with habitual constipation, is a frequent cause of the production of ammonia, and of the absorption of the carbonate of ammonia—giving rise in the blood to the ammoniaco-magnesian phosphate.

Experience has proved that repeated purgatives are useful to prevent congestions, and effusion of blood into the brain;* their usefulness was explained by a supposed inflammatory derivation towards the

* Louis XIV, whose immense appetite is a matter of history, probably owed his long reign to the regular purgations ordered by his physicians.

intestine; but we now know differently. Is it not more natural to admit that they act by eliminating not only salts of ammonia, but the phosphates themselves? for observation shows that in herbivora, whose urine is alkaline, the insoluble phosphates are habitually eliminated by the intestines.

These supposed inflammatory congestions have as their cause and origin, infinitely fine deposits of insoluble matters, which are produced in the blood (oxalate of lime, cholesterin, alkaline urates, triple phosphates), and serve as nuclei for fibrinous collections, opposing the free circulation of blood in the capillaries, and leading to disease and rupture of the vessels.

I must stop here, but it is easy to foresee the importance of this question of the formation, in the blood, of insoluble bodies difficult of elimination. I return to the special investigation of gravel and calculi, which is the principal object of this work.

Gravel and calculi of earthy phosphates and carbonates (fermentation of urine before emission).—Urinary gravel and calculi of phosphate of lime, ammoniaco-magnesian phosphate, and carbonate of lime, are not derived from any special or increased elimination of normal products, but from a spontaneous decomposition of the urine before its emission. The urine contains phosphates of lime, magnesia, potassa and soda, which constitute the principal organic residue of muscle, bone, and the cereals. They, therefore, have normally a double origin—the tissues of the body, and the daily food and drink—and cannot be considered unless also in relation to the in-

gesta. The disease proper is in the urinary passages, particularly the bladder, which, most often, is only secondarily affected. The following is a recapitulation of the principal characters of the concretions which form in urine that has lost its natural acidity.

Phosphates.—These calculi are recognized by their general solubility in acids, without effervescing; the clear solution giving a precipitate upon the addition of an alkali. They leave, after calcination, an earthy residue which does not effervesce with acids.

Phosphate of lime.—This salt is always mixed with mucus in calculi, and is never found pure; those calculi in which it predominates have a polished, slightly-brown surface. These are formed by the union of concentric lamellæ, which may be easily separated; the fracture of these lamellæ is radiated, and seems to be made up of parallel fibres. When the calculi are heated they become black, because the mucus, which acts as a cement, calcines and gives out an odor of burnt horn. At a more elevated temperature they fuse, and the more readily is this so the more phosphate of magnesia they contain, resembling then more closely the fusible calculi of which we shall speak.

Ammoniaco-magnesian phosphate.—The double phosphate of magnesia and ammonia, associated with mucus, often constitutes the principal part of those urinary calculi which are white and shining.

Their surface is usually rough and bristling with brilliant points; their structure is never lamellated; they are generally very easy to crush, though in

some cases, they are found hard, and with a crystalline fracture, being apparently formed, to a considerable extent, by the union of little crystals derived from the right prismatic system. Caustic potassa disengages ammonia from them; heated on platinum foil, they blacken and give off ammonia; and when heated quickly with nitrate of cobalt, they leave a red globule.

Fusible calculi.—Designated under this name are calculi formed by the association of phosphate of lime with ammoniaco-magnesian phosphate, and united by mucus.

They are oblong, round, and light; but what characterizes them especially is that, when heated in the blow-pipe flame, after the destruction of the mucus, they fuse with great facility.

Carbonate of lime.—This salt is often deposited in the urine of herbivora, as, for example, in that of rabbits fed with herbs. It is rarely found in human urine, and never in a pure state, but always associated with other salts and mucus; it is found with phosphate of lime and triple phosphates, in elderly persons with diseased bladders, and, in certain cases, in the bladders of individuals who, after an operation for lithotripsy, make use of Vichy water.

I have found the carbonate associated with the oxalate of lime, in a stone confined within the kidney of a child (*Journal de Pharmacie*, 1839). Nothing is easier than to demonstrate the presence of carbonate of lime in a calculus; it suffices to treat it with nitric acid diluted with ten times its weight of water, when the carbonic acid effervesces off, and the fil-

tered solution yields a precipitate of oxalate of lime when oxalate of ammonia is added.

Silica in insoluble grains, has been found by Fourcroy, Berzelius and Boussingault as nuclei of phosphatic calculi; it appears certain that this has been introduced accidentally into the bladder, and, therefore, we shall not dwell upon it.

Conditions of the formation of phosphatic gravel and calculi.—The earthy phosphates are deposited in urine which becomes alkaline, from whatever cause this may be.

a. *Ingesta.*—The use, and particularly the abuse, of alkalies—bicarbonate of soda and potassa, salts of soda and potassa of which the acid is organic, alkaline waters (Vals and Vichy)—favor the deposit of phosphates in the bladder. A considerable addition of fruit, herbs, potatoes, or strawberries to the diet produce the same effect, by rendering the urine alkaline. If, in this event, the urine remains long in the bladder, a deposit may form, consisting of phosphate of magnesia, carbonate of lime, and phosphate of lime.

The reason why the urine of herbivora is not clear is because it contains a large amount of carbonate of lime, with phosphate of lime, and triple phosphate in minute subdivision.

b. *Difficulty in voiding the urine.*—Why do these ingesta not produce the same effects in every case? It is because in some the bladder is healthy, and is completely emptied, whilst in others the bladder, having become paralyzed or inflamed, has lost its contractility, and can only be partially emptied by

the action of the abdominal muscles. This explains why these calculi are so frequently found in old persons whose urinary passages are diseased, and in whom micturition may be interfered with by various causes, such as paralysis, contraction of the urethra, and enlargement of the prostate gland.

Chronic cystitis, arising primarily in the bladder itself, is very rare, but as a result of affections of the urethra—chronic gonorrhœa and stricture—it is very common.

c. *Ammoniacal fermentation*.—We have seen that in bladders which cannot empty themselves, or only incompletely so, the urine sometimes becomes alkaline. How is this phenomenon produced? It is that the urine contains urea (25 grammes (287 grains) daily) which is decomposed into carbonate of ammonia, requiring only *two equivalents of water* for it.

This transformation of urea into carbonic acid and ammonia is most often effected under the influence of a special organized and living ferment, and it has received the name of *ammoniacal fermentation*.

The transformation is not spontaneous; we may leave urea in water for a long time and the change does not take place; neither does it in urine which contains, as organized products, only epithelial cells and mucus; but when pus is present the transformation is constant.

It is not known whether it is due to the pus alone or whether there is additionally a *special ferment*, but it is true that the decomposition almost always ensues when pus is present.

Dumas has designated as *ammoniacal fermentation*

the conversion of urea into carbonate of ammonia, under the influence of water, a ferment, and a suitable temperature. Jacquemart has experimented upon this change, and has demonstrated the constancy of its occurrence whenever the conditions are favorable.

But among the organized products of the fermentation of urea, there is one which Pasteur has pointed out in his "Memoir on Spontaneous Generation:" this is a bead-shaped torula. Tieghem has observed the constancy of this small vegetable growth whenever there is a fermentation of urea. He designates several different circumstances.

The reader is referred to the "Annuaire" for 1866, p. 318 to 325, for a detail of these observations.

Signs.—The symptom which announces the formation, in the bladder, of phosphatic gravel and calculi, is a deposit, more or less abundant, in the voided urine, of mucus, phosphate of lime, and ammoniaco-magnesian phosphate. Carbonate of lime is likewise almost always found, and sometimes even oxalate of lime. Such urine has usually an ammoniacal or very disagreeably putrid odor.

Source.—These calculi are derived from the residue which results from the metamorphosis of the tissues of our bodies, such as muscle and bone, which contain phosphates of lime, magnesia, potassa, and soda; they are also derived from the elements of food.

The ash of grain and bread contains phosphates of lime, magnesia, iron, and particularly, potassa. There is more phosphatic residue in the ash of grain than in that of the body. Through the agency of

the salts of lime contained in potable waters, the phosphate of potassa existing in grain is changed, by the process of nutrition, into phosphate of lime.

Why are so few phosphatic stones found notwithstanding the constant presence of the phosphates of lime and magnesia in our food? It is on account of their great solubility in the fluids of the body, and in urine which is slightly acid. In alkaline urine, on the contrary, they are very insoluble.

We may not, then, eliminate the phosphates from among the elements of our food, as we have done with the oxalate of lime. Nor are we able to expel them from the body by means of aqueous diluents; for when the urine becomes alkaline, it deposits the phosphates, even though the specific gravity be very low.

Accidents arising from the deposit of phosphates in the bladder.—Accidents resulting from the formation of calculi are very serious.

The use of Vichy water for a single season suffices to produce one, so rapid is the growth. I have seen a patient, upon whom lithotrity had been performed before his departure for Vichy, return with a new calculus.

The numerous cases of return of urinary calculi, cited in works upon lithotrity, refer, for the most part, to phosphatic stones.

The deposit of phosphatic gravel generally takes place in bladders which, having lost their contractility, cannot be thoroughly emptied; the urine then only escapes when the organ is over-distended—

hence the frequent desire to urinate, and the incontinence of urine, which so afflicts the patient.

Moreover (to complete this sad picture); the bladder undergoes increasing alteration, under the double influence of pus and putrid ammoniacal urine.

The resorption of certain elements of pus and carbonate of ammonia then leads to uræmic and pyæmic complications. If these cases are not properly cared for, the patient soon dies, a prey to his disease; but happily the treatment is both rational and efficacious. We shall rapidly run over its main features.

Prophylaxis and hygiene of phosphatic deposits.—When the deposit is accompanied by cystitis, and the urine contains pus and an excess of mucus, recourse is generally had to terebinthines—pills, capsules, syrup, tar-water, infusion of fir-tops, &c.

I would not deny the utility of these agents, but it would be an error to count upon them absolutely, and to continue their use for too long a period, to the neglect of other more efficacious measures.

If there are no reasons why the sound should be immediately used, the following remedies may be given internally, with the hope of restoring the normal acidity of the urine.

In the first rank I place benzoic acid; dissolving 15 to 30 grains in 2 pints of water, to be taken in the course of twenty-four hours. This passes into the urine as hippuric acid; and Landerer says the same of gallic acid, which may be given in doses twice as large as the benzoic. Nitric acid lemonade, or nitro-muriatic acid in doses of 4 or 5 drops in a

cupful of infusion of chamomile, may be allowed before each meal.

These remedies should be abandoned if the urine does not become limpid upon emission, and particularly if the health fails and the patient loses strength. In this event, we should no longer delay, but have recourse to really efficacious measures.

In the first place, the patient should be taught to introduce the catheter himself; for the first rule is to empty the bladder thoroughly and regularly every six hours, which, of course cannot be readily done if assistance is required each time. I cannot too forcibly insist upon this point.

If the bladder is not emptied, pus, and the *specific ferment*, which is the result of ammoniacal fermentation, rest continually upon the base of the bladder; and as rapidly as the urine comes from the ureters, the urea undergoes its transformation into carbonate of ammonia. The ferment is never entirely removed, and a new fermentescible fluid is constantly being poured in. It is a circle, fruitful in various disorders, and, finally, interrupted by death.

At Bicêtre, few old persons are observed to enter with chronic diseases of the bladder; not that these affections are more rare in that class of people, but through neglect of their health, and deficiency of special education and forethought, they do not learn to catheterize themselves, and so die before being brought to the hospital.

Intelligent and careful patients do not omit to acquire the power of attending to themselves in this regard. As long as the urine is not limpid, the self-

catheterizing should be constant and habitual; and, thanks to regularity in this, all dangers disappear, and such patients may live to a good old age.

However, there are cases in which simply emptying the bladder will not answer, and recourse must be had to washing it out. The object of this is threefold: 1st, to remove or destroy all traces of this special ferment; 2d, to improve the condition of the bladder; 3d, to restore its contractility.

The first injections should consist of pure water at the temperature of the urine (37 deg. Cent.), gradually lowering the temperature as the bladder becomes habituated.

The nature of the injection may be varied, according to the effect obtained.

The first thing to be tried is carbolated water, containing from one-twentieth to one-half per cent. of acid.

I have often prescribed with success the solution of benzoated alum, of the strength of from one-half drachm to four drachms or more, to two pints of water.

Other solutions may be used; that which has been most employed is one containing from seven to thirty grains of nitrate of silver in two pints of water.

A saccharine solution (10 per cent.) with a little yeast may be injected, but, in this event, the catheter should be allowed to remain permanently, so as to admit of the escape of the carbonic acid gas as fast as it forms.

I borrow from the work of Leroy d'Etiolles, en-

titled "*Traité Pratique de la Gravelle et des Calculs Urinaires*," the following summary of the principal efforts that have been made to effect the solution of calculi, by means of injections into the bladder.

"As soon as surgery was in possession of means of penetrating into the bladder with instruments, such as catheters and sounds, it very naturally was suggested to introduce solutions for the purpose of dissolving stone.

"Baronius* proposed to make injections by means of a tube, some of a decoction of marshmallow root or oil of sweet almonds, with a view of quieting the pain caused by the stone, and others of lemon juice or stag's blood, for the purpose of dissolving foreign bodies. If the first had any efficacy, it is easy to see that the second must have been without effect.

"Long after this, lime-water, which Whytt, Dehaen and Hufeland had substituted for the celebrated Mlle. Stephens's remedy, was used by injection.

"Langrish† used lime-water, with the addition of fifteen or twenty drops of caustic potassa, upon dogs, two or three times a day, and it was borne without pain or accident. Upon Whytt's‡ recommendation, Campbell gave a similar injection to a child three years old, who retained it for four hours.

"With an ivory canula, five inches long, to which was adapted a kind of bellows, Butter repeated Langrish's injections of lime-water, and also admin-

* Theod. Baronius, de Operatione, Ann. 1617.

† Physical Experiments upon Brutes. London, 1745.

‡ An Essay on the Virtues of Lime in the Cure of Stone.

istered the same solution through the stomach, and by enemata. Rutherford used the same apparatus to inject four or five ounces of lime-water, morning and night, into the bladder of a Scotch mountaineer, having first recognized the existence of a stone by means of the sound.

"We may, like my father, be astonished, in view of the results obtained, to see such tentative measures lie forgotten."

Hales first conceived the happy idea of throwing a continuous stream into the bladder, using for this purpose a double catheter. To one of the openings externally, he adapted a flexible tube through which the liquid flowed from a vessel elevated two or three feet above the spot. By this means he kept up a stream of warm water through the bladder of a bitch for more than four hours, and the animal experienced no pain. But the English physiologist left to others the application of his idea to man. Gruithuisen, with a less perfect apparatus, passed a constant stream into the human bladder; but he exaggerated beyond measure the height from which he thought the liquid should fall, having placed it upon the top of the patient's dwelling; nothing is said of the results.

The double catheter was again brought into notice by Cloquet, in 1821, after Hales's work had been completely forgotten. He thought that if calculi were affected, in a given time, by feeble reagents introduced into the bladder, the solution could be accomplished in a short time by passing large quantities of the solvent through the organ. He preferred distilled water, but the effects were slow and limited.

If the rational method of irrigation has been so seldom employed, it is because it has not been followed by success; and it has been found impossible to overcome the individual difficulties which surround each case.

The introduction of the double metallic catheter, by the patient himself, is attended with some difficulty, if there be much sensibility of the canal, and, though preferable to all others, must sometimes be given up.

The arrangement of an elevated reservoir is often inconvenient, so, availing myself of the advice of Messrs. Robert & Collin, I have substituted for it a vulcanized rubber-ball, acting like a bellows. Lately I have used Aiguissier's irrigator, constructed by Messrs. Charrière, Robert & Collin; it is furnished with a flexible tube, to which a catheter is fitted on one end; by means of a metal tube with a close joint, the other end communicates with the reservoir. To use the apparatus, a long flexible tube (B), with a double catheter (A) at its end, is attached at the faucet (C), the current being admitted and controlled by the faucet.

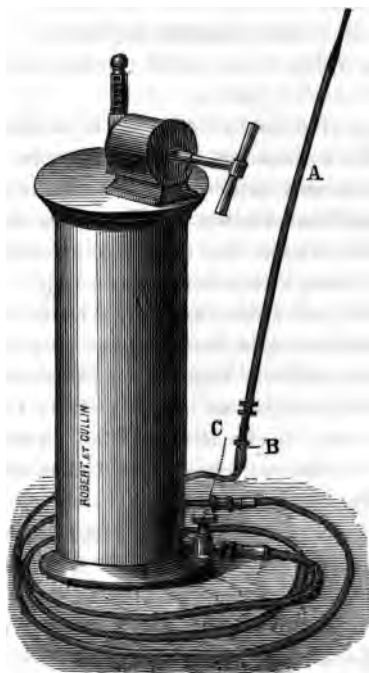
When the metal catheter is painful, one of gum may be used; and if the canal be a small one, the single catheter will suffice, the bladder being alternately emptied and filled.

If the liquids to be injected have any chemical action upon the reservoir, this may be of porcelain, as made by M. Barral in Paris.

It is my profound conviction that there is sufficient promise of benefit to induce us to make renewed at-

tempts to dissolve stones in the bladder, but it demands much exercise of will and perseverance on the part of the patient.

A great deal of study is still required to overcome difficulties, some of which will, for a long time, perhaps, be insurmountable.



Before resorting to any measures to effect a solution of the stone, its chemical character should first be ascertained, that the proper treatment may be

applied. The local treatment should be aided by internal medication adapted to the individual nature of the stone, and, in all instances, aqueous drinks should be largely indulged in.

Calculi of *oxalate of lime* are the most difficult to dissolve, in the present state of our knowledge; the injections may be confined to pure water, in the absence of any better known solvent.

Uric acid calculi are more readily affected than those of oxalate of lime.

By means of copious draughts of water, with the addition, sometimes, of benzoic acid or some acid containing it, and alternating with alkalies, I have succeeded in diminishing the size of calculi as large as filberts, so as to permit of their expulsion through the urethra, not, however, without pain. I am sure that aqueous injections, patiently conducted, would have materially aided the internal treatment. For uric acid concretions there are solvents which may be used cautiously, so as not to irritate the bladder.

Such are principally the alkalies, bicarbonates of potassa and soda, commencing at first with a weak solution (one-tenth per cent.), and gradually increasing. Borate of potassa, borate of soda and borate of ammonia may also be tried in larger doses (see page 94). The condition of success is that the injections should be performed several times each day. If the catheter is used every six hours to empty the bladder, the injections may then be made. The operation is simple, and can easily be acquired.

Phosphatic calculi require, as internal treatment, only copious draughts; those containing one-tenth

per cent. of benzoic acid are preferable. These calculi render the catheter indispensable every six hours, and, therefore, the injections may be resorted to with the greatest facility. As their production is early indicated by the odor and turbidity of the urine, prompt action may be taken.

Water slightly acidulated may be used, commencing with 1 part of the acid in 1000 of water, and gradually increasing it to 5 parts, according to the tolerance of the bladder. Lactic, hydrochloric, acetic, or phosphoric acid may be employed.

Five or ten per cent. of honey, with a teaspoonful of yeast, may be added. As before indicated, the catheter should be allowed to remain in as long as carbonic acid gas is formed; and after this solution has been retained as long as possible, the bladder should be emptied, and thoroughly washed with pure water. These solutions may, of course, be varied at pleasure, but it is certain that if they are taken in time, these stones, which manifest such a disposition to re-form, may be removed and prevented.

The possibility of simultaneously treating the urethra and bladder encourages me to propose these tentative measures.

A precept of the greatest importance, and one often forgotten by surgeons eager to operate, is to *re-establish the physiological state of these organs before having recourse either to lithotritry or lithotomy*; for we have seen how essential it is that the bladder should be healthy, and rid of all the ferment arising from ammoniacal change! Take time to dilate the canal, and cure the bladder.

GENERAL CONCLUSION.

Finally, I may say that these insoluble deposits in the bladder, and in the vascular apparatus, become the source of formidable troubles. When the cause can be recognized, it may almost always be remedied, but we must know what we are doing, and should not confound essentially different diseases.

ADDITIONAL NOTE.

The skin in polyuria.—Several of the diseases which Bazin ranges under the head of *Arthritides*, should be regarded as symptoms of polyuria; yet upon so difficult a subject we cannot well be too guarded. I shall here limit myself to the enumeration of the different affections which Bazin includes under this head, without affirming anything or attempting to separate from each other the disorders referable respectively to polyuria and rheumatism.

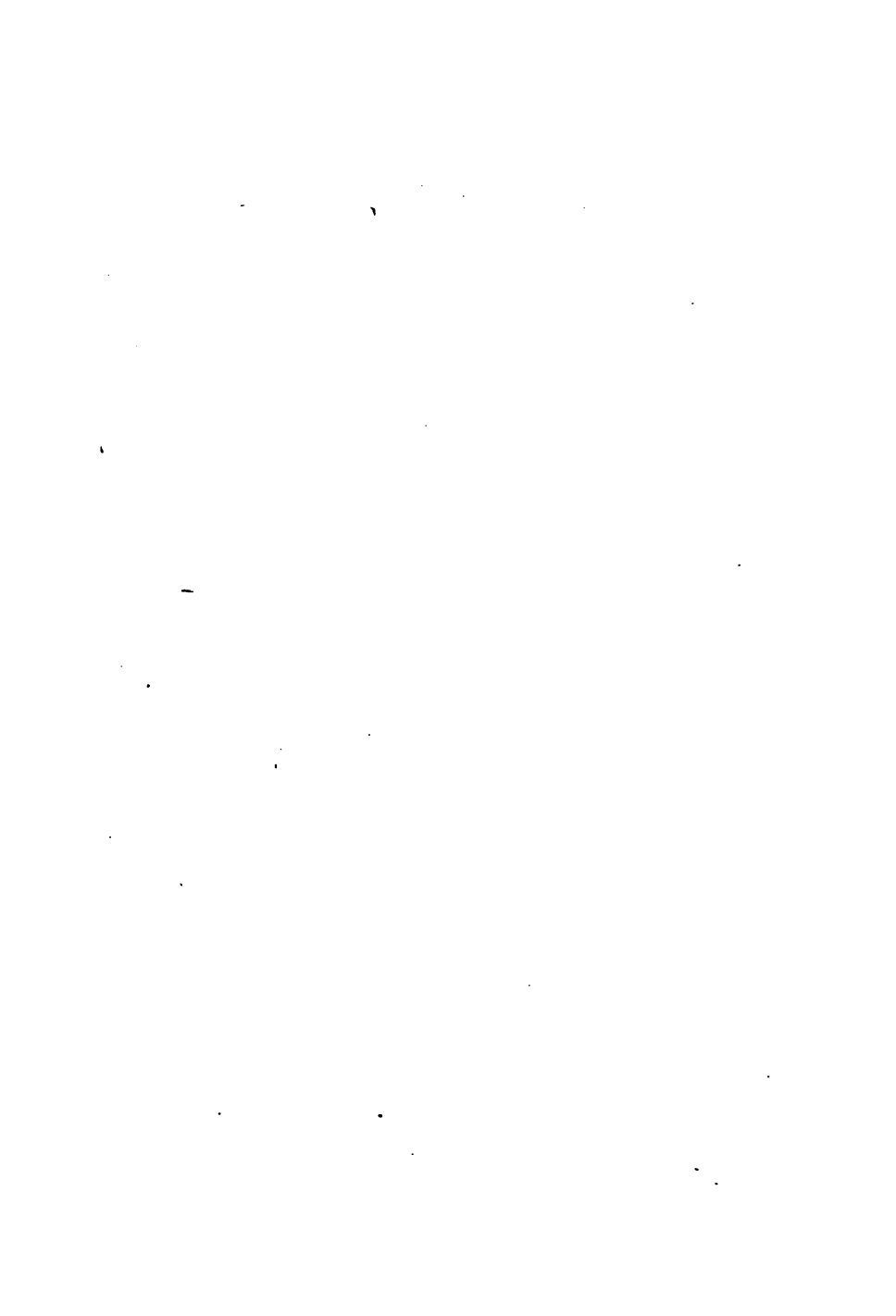
The *arthritides* develop themselves principally upon exposed parts, as the face, forehead, roots of the hair, pilous parts, hands, and feet. They assume generally a nummular form, and are limited in extent.

Pseudo-exanthematous arthritides include: 1st, the *erythemata* (erythema nodosum): urticaria, acute disseminated pityriasis; 2d, *vesiculæ*: herpes zoster; 3d, *bullæ*: acute pemphigus.

Dry arthritides include: 1st, the *erythemata*: intertrigo, papulo-tubercular erythema, acne, cnidosis; 2d, the *squamæ*: pityriasis, and psoriasis; 3d, the *papulæ*: prurigo, lichen, and acne.

Moist arthritides include : 1st, *the vesiculo-squamæ* : eczema, sudamina ; 2d, *herpetic bullæ* : chronic pemphigus ; 3d, *the puro-crustaceous* : mentagra, ecthyma, and furuncle.

I am aware of the objections raised against the establishing of a group of arthritides, and am convinced that those diseases of the skin ranged under the head of parasitic, syphilitic, and even scrofulous, affections, are classified in a more exact manner, from an etiological point of view. Nevertheless, the most prejudiced minds cannot but admit a connection between gout, rheumatism, and several pathological conditions of the skin. This is what has induced me to present, in this note, M. Bazin's classification of the arthritides.



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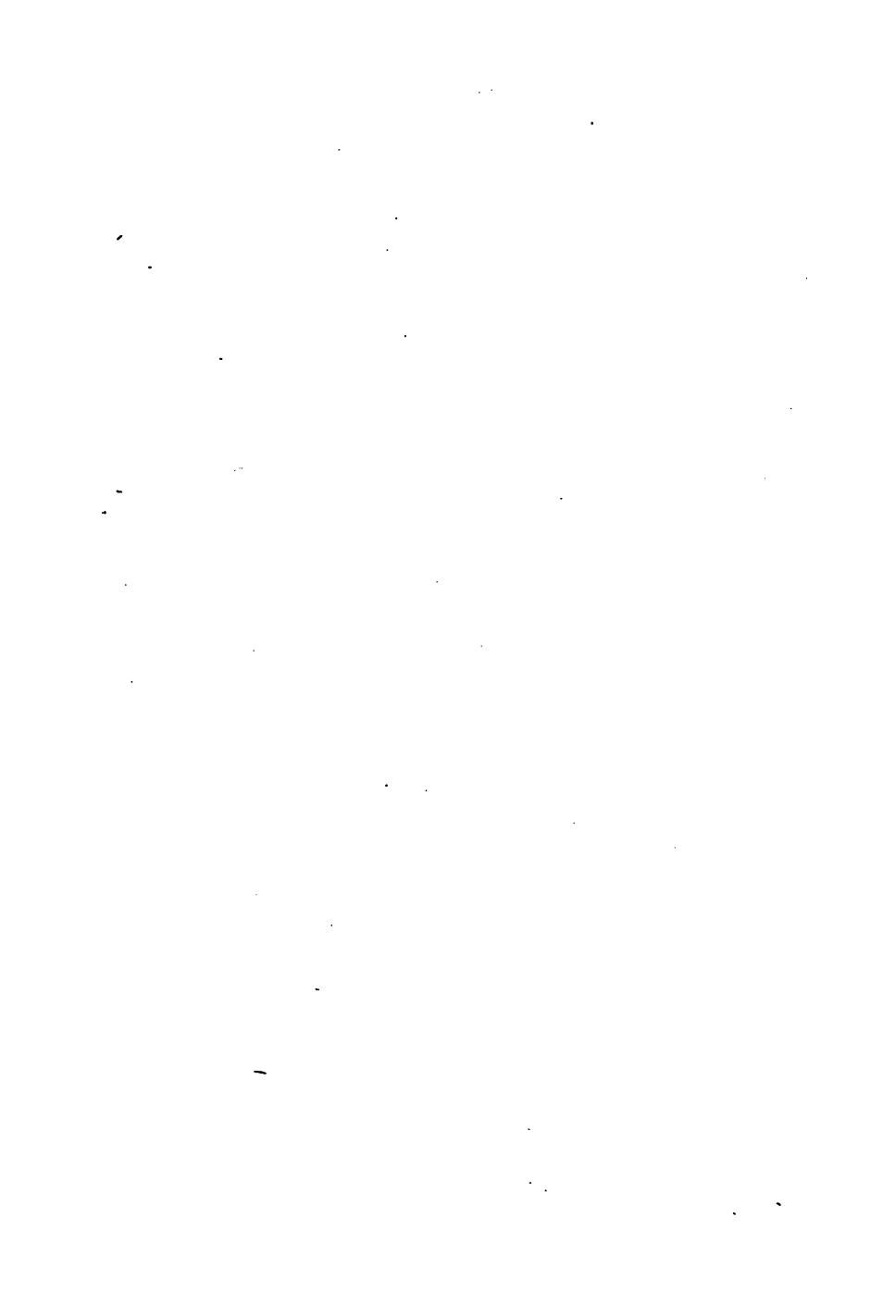
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